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The Raven Mine
A Regulatory & Fiscal Black Hole?
A look at environmental enforcement & securities at mines in BC

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Acronyms & Abbreviations

ARD	Acid Rock Drainage
CCME	Canadian Council of Ministers of the Environment
CEAA	Canadian Environmental Assessment Act
CEIU	Commercial Environmental Investigations Unit
CEPA	Canadian Environmental Protection Act, 1999
Chief Inspector	Chief Inspector of Mines
COS	Conservation Officer Service
DFO	Department of Fisheries and Oceans Canada
EA	Environmental Assessment
EAO	Environmental Assessment Office
EMA	Environmental Management Act
MEMPR	Ministry of Energy, Mines and Petroleum Resources
MMER	Metal Mining Effluent Regulation
MMLER	Metal Mining Liquid Effluent Regulations
MOE	Ministry of Environment
MOU	Memorandum of Understanding
NEMISIS	National Enforcement Management Information System & Intelligence System
NPRI	National Pollution Release Inventory

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Introduction

This paper provides an assessment of Government's ability to protect the Comox Valley should the proposed Raven Coal mine be approved. It addresses two fundamental questions:

- Does Government have adequate legal and staff resources to protect the local environment from potential harm from coal mining activity in BC?
- Will Government require the company to provide enough financial security to ensure that the company – not the public and Mother Nature – pay for all environmental damage that may be caused by the mine?

The Comox Valley is rich in many different resources – the world renowned shellfish in Baynes Sound; important salmon and trout runs in Cowie and Cougar Smith Creeks; wildlife such as the Roosevelt Elk who roam the majestic forests; and then of course, there's the coal. As long as the coal remains in the ground, the surrounding ecosystems thrive. This is recognized by local governments who have classified the watershed near the proposed mine as critical and have identified important biodiversity corridors in the valley.¹

However, when heavy mining equipment rolls in and begins moving the coal around, scientists have shown that the natural balance changes – causing detrimental environmental impacts. A common impact is an increase of harmful substances in waterways. This is evidenced by the increasing arsenic levels in Long Lake – a waterbody located in close proximity to the Quinsam coal mine near Campbell River.² It is the local communities that ultimately bear the heavy burden of these impacts – through the air they breathe, water they drink, revenue they lose, or other local activity that is harmed. The high risk of health impacts is highlighted by research showing that Vancouver Islanders drawing drinking water from groundwater in coal mining areas have worse health outcomes than those that do not.³

The proposed Raven Coal mine raises a host of important environmental concerns. These include acid rock drainage and metal leaching, coal dust pollution, groundwater contamination, blasting vibrations, and the impacts of continuous mass transport of coal across the Island. In addition, the mine is located in a high earthquake-risk zone, and the proposed coal port in Port Alberni is located in a high tsunami-risk area. Perhaps most disturbing is the continued drive to mine a material that is known to be one of the world's largest sources of atmospheric carbon – a primary cause of global climate change.

Mine supporters point out that mining companies are bound by government laws and mine permit conditions. However, the government's environmental enforcement efforts must be real and substantive – government must do more than merely set out nominal rules. As we have seen in the recent BP spill and nuclear accident at Fukushima, pollution rules are not worth much if they are not effectively enforced. In addition, since a mine can pollute for several decades after the mine company ceases to exist, an adequate up-front guarantee or security needs to be in place in case the company cannot pay for future cleanups. The numerous abandoned mines that are still causing pollution across the province underscore this problem.⁴

The first section of this paper evaluates Government's capacity to *enforce* environmental protection laws at mines in BC. There are a number of statutes that apply, but the focus is on the four most important. The second section evaluates the amount of *security* required at mines in BC -- and Government's disappointing history of failing to ensure that mining companies actually pay for the environmental damage they cause. Reference is made to other jurisdictions where stronger polluter-pay laws require companies to provide better security.

1. Insufficient Enforcement

“The health and well-being of Canadians, as well as that of the environment, must not be placed at risk through ineffectual enforcement practices”
- Standing Committee on Environment and Sustainable Development (1998)⁵

The responsibility for environmental enforcement at mines in BC is given to a number of different provincial and federal ministries.⁶ Each is responsible for enforcing specific provisions of different laws, most notably the provincial *Mines Act* and *Environmental Management Act*, and the federal *Fisheries Act* and *Canadian Environmental Protection Act, 1999*.⁷ Environmental assessment legislation from both levels of government also applies at the initial mine approval stage.⁸ In the past, there have been significant success stories from strong enforcement of these laws.⁹ Unfortunately, this is no longer the case. As the following discussion demonstrates, the current Government enforcement regime cannot ensure adequate environmental protection at BC mines.

1.1 Environmental Assessment Statutes

“What good are the Certificate requirements if they are not complied with, or
if there is no effective control to deal with non-compliance?”
- Taku River Tlingit First Nation (2009)¹⁰

Environmental assessment (EA) legislation offers a potentially powerful tool for driving the selection, design and implementation of mining developments.¹¹ Unfortunately, both the provincial and federal statutes face serious enforcement problems. At the provincial level, the main legal requirements requiring enforcement are attached as *conditions* to the **EA Certificate**. However, these conditions do not automatically include all the recommendations made by the project committee that oversaw the EA process.¹² Rather, proponents are encouraged to develop their own “**table of commitments**” that states how they will address issues raised during the review process. This table is attached to the EA Certificate and becomes the basis for enforcement of the EA commitments.¹³ As such, it is the proponent that ultimately sets its own legal requirements. These requirements are further softened when the proponent uses drafting language such as “*where feasible*” or “*where possible*” – language which is not sufficiently clear to meet contractual standards or to allow for effective enforcement.¹⁴

Another concern with the provincial EA process is the associated *Concurrent Approval Regulation* that allows proponents to apply for a “**concurrent approval**” with other permits (e.g., mine permit, water license, effluent permit, etc.).¹⁵ Where granted, other agencies must make a decision on those permit applications within 60 days of the issuance of the EA Certificate.¹⁶ Although the regulation provides that

a ministry may refuse to issue a post-certificate approval if they provide reasons within a set time period,¹⁷ **practical experiences suggest that withholding of permit approvals are rare and unlikely.**¹⁸

The provincial Environmental Assessment Office's (EAO) **lack of field presence** coupled with its **lack of a viable compliance and enforcement strategy** are further challenges to the effective enforcement of provincial EA conditions.¹⁹ Moreover, although the 2009 EAO User Guide provides that inspections *may* be undertaken where appropriate,²⁰ government staff report that **successive staff and budget cuts have had significant impacts on their enforcement capabilities** and they do not consider the enforcement of EA certificates to be within their mandate.²¹ In addition, although **sanctions for non-compliance** under the Act are quite broad,²² the EAO recently admitted that it was **not aware of these powers being utilized.**²³ Finally, the evidence suggests that **monitoring of environmental commitments** is generally limited to proponent-hired monitors and is **in place only for a limited period** at the construction and early operational stages of the project.²⁴ This weakens environmental protection when a mine is in the later (and critical) operational and closure stages.

There are also EA enforcement concerns at the federal level. Without going into an in-depth analysis, it is noteworthy that the **Canadian Environmental Assessment Act (CEAA) is silent on offences or penalties for violations of the Act or Regulations.** This provides little incentive for proponents to follow through with the commitments they make under this process.²⁵

1.2 Provincial Mining Legislation

The BC *Mines Act* mandates enforcement for both health and safety, and environmental protection at mines. Both purposes are extremely important. However, the relative vagueness of environmental provisions under the *Mines Act* and associated Code – coupled with the significant discretion afforded to environmental decisions – reflects **the legislation's dominant focus on worker health and safety rather than environmental protection.**²⁶ Indeed, health and safety is the sole topic covered in the only regulation detailing the scope of mine inspections.²⁷ It is significant that several specific requirements are outlined in the Act for health and safety inspections: for example, when making a health and safety inspection, the inspector must be accompanied by a work co-chair and management co-chair.²⁸ However, no similar requirements are specified in the Code for inspections of environmental conditions at mines.

Rather than being clearly stated in the Act or regulations, the main legal requirements for environmental protection at mines are generally specified as individual **permit conditions.** This raises issues about **inconsistent environmental protection** requirements both at different mines and at different locations within a particular mine site. For example, the Quinsam coal mine permit sets out monitoring and reporting requirements for three different locations. However, sulphate (a critical indicator of acid rock drainage) is required for some, but not all of these locations.²⁹

Chronic failure to actually enforce permit conditions is exemplified by another incident at the Quinsam mine. This incident began on December 18, 2003, with the release of 11,000 cubic meters of mine effluent from a breached settling pond at the mine. Although the Permit required reporting of such incidents within 24 hours, government documents indicate the release was not reported to authorities

until four days later. Under the former *Waste Management Act*, the Ministry could have sought a substantial fine. However, government chose to warn the company instead of charging them, and gave the company a directive to update their environmental procedures manual. Although the discharge permit mandated that the manual be updated annually, it had not been done since 1998. This non-compliance had previously been recognized by Ministry staff who sent the company a letter in 1999 stating that the manual was *‘inadequate and should be updated’*. The manual was finally submitted in the fall of 2005 – apparently seven years late.³⁰ A similar approach was adopted more recently by the MOE for a fish farm company that was discharging waste into a lake without authorization. In response to the infraction, the government ordered the company to *“submit all outstanding information that had previously been requested from the company in order to complete a discharge application.”*³¹ The success of this approach at dealing with non-compliance is highly questionable.

Another concern is the **practice of simply relaxing permit requirements when a company fails to meet permit conditions**. This is commonplace in the industry. (Indeed, citizens have complained about lack of enforcement at Quinsam Coal, alleging that in December 1999 the company successfully applied for permit amendments to increase the upper pH limit of their effluent in an on-site pond and to double the number of days allowed to discharge effluent into the watershed.) In addition to approving greater environmental harm, this general government approach may lead to a loss in government revenue.³²

It is interesting to note that the BC Environmental Appeal Board has commented that having made a decision to issue a permit, the government is obliged to enforce the permit terms and conditions: *“[t]o do otherwise amounts to a violation of public trust”*.³³ Unfortunately the evidence suggests that government is violating this public trust at mines in the province.

1.2.1 Mine Inspectors

The importance of mine inspection has long been recognized in BC – already in 1906 it was noted that *“enforcement of the regulations hinged on the inspection system”*.³⁴ Today, under the *Mines Act*, the Chief Inspector of Mines (the “Chief Inspector”) appoints inspectors who are empowered with a range of powers including to **inspect a mine at any time**.³⁵ Where an inspector finds that a mine is not being operated in accordance with its legal requirements,³⁶ he may order, amongst other things, an order for remedial action.³⁷ If the order is not complied with, the inspector can apply to the Supreme Court for an order directing the person to comply.³⁸ Unfortunately, past experience suggests that these orders are insufficiently enforced, resulting in long delays before corrective action is taken.³⁹

Failure to comply with legal requirements under the Act is an offence.⁴⁰ However, **the maximum penalty for an offence under the Act is limited to a fine of \$100,000 and one year imprisonment**.⁴¹ Compare this to the successful history of pollution prevention at pulp and paper mills in the province, where maximum penalties for pollution offences were set at \$1 million per day with potential jail sentences of up to three years.⁴² Prosecution is further challenged by the short limitation period available for the Chief Inspector to lay an information: it is limited to one year after the facts come to his attention for a mine permit related offence⁴³ and only six months for an offence under other provisions of the Act.⁴⁴

In 2003, the inspector's powers were extended to include cases where he "*believes on reasonable grounds that a contravention of the Act, regulations, Code, permit, or orders is having a detrimental environmental impact*".⁴⁵ When this occurs, the inspector has broad powers to order immediate remedial action be taken, regular work be suspended until remedial action is taken, or that the mine, or part of it, be closed until remedial action is taken.⁴⁶ Upon questioning, a senior inspector of mines acknowledged that this provision broadens the inspector's powers to make orders where they have *reasonable grounds* to suspect environmental harm, rather than the more onerous proof required to enforce mine permit conditions (i.e., clear evidence or permit violation is required to enforce permit conditions). However, although inspection reports are publicly available, they are not online and are scattered in different files. Thus they are difficult for the public to assess. Unfortunately, this mine inspector could not confirm any specific orders made under the new provision, which raises questions regarding the level of practical application of this important provision.

Box 1: A mine inspector's duty to enforce: Recent case law

The Supreme Court of Canada recently considered a mine inspector's duty of care in *Fallowka v. Pinkerton's of Canada Ltd.* (2010 SCC 5). There, nine mine workers were killed when an explosive device went off during a bitter strike at the Giant Mine in the Northwest Territories. The Act mandated that mine inspectors immediately issue a stop-work order in any mine that he considered unsafe. Similar provisions are available under the BC *Mines Act* for detrimental environmental impacts and hazards that are dangerous to persons or property (ss.15(4.1), 15(5)).

Justice Cromwell reviewed the facts and the statutory provision to determine if the government was liable for negligently failing to prevent the murders by not making and enforcing a stop-work order. He found there was sufficient foreseeability & proximity to establish that the government had a *prima facie* duty of care that was not negated for policy reasons ([55, 57-75]). In finding such a duty, the court drew a close parallel to earlier cases on building inspections, and acknowledged the closeness of the relationship between the mine inspector and the miners ([44, 46, 51]). In a case of environmental harm, foreseeability would likely be established, especially where permit conditions are not being met, and a possible proximity argument may be found if the local community or the miners themselves are harmed by the environmental damage. Ultimately in *Fallowka*, the government was found not liable based on the question of standard of care; the fact that the government had sought and acted in good faith on legal advice when it decided not to close the mine was sufficient to meet the required standard – this regardless of the fact that the legal advice ended up being wrong ([89]).

Fallowka shows how mine inspectors can owe a duty of care to miners in relation to statutory health and safety enforcement requirements. Although it has not yet been extended to environmental protection responsibilities, the similarity in mandated actions under the relatively new section 15(4.1) of the BC *Mines Act* (*for detrimental environmental impacts*) suggests a similar duty of care may be present. *Fallowka* stands for the important legal principle that where the relationship is sufficiently close, mine inspectors owe a duty of care to carry out their statutory enforcement powers. (Similarly, in the earlier case of *Swanson Estate v. Canada* (1990), 19 ACWS (3d) 810 (FCTD) (affirmed by the Federal Court of Appeal in [1990] 2 F.C. 619) the Federal Court held that with the decision to impose standards comes the duty to ensure compliance, which means to inspect and enforce).

Recently, the provincial government's Resource Management Coordination Process has begun transferring officials from the Ministry of Forests to conduct mine inspections. The discussion with the previously mentioned inspector of mines indicated that this process has been ongoing for approximately a year and half and has included both in-class and field training (shadowing of mining inspectors). This suggests a shift towards greater inspection capacity for mines in the province. However, concerns remain that forestry inspectors may not have sufficient expertise in mining, and there is a risk that they may focus more on elements of a site familiar to forestry operations (e.g., roads and forest habitat) as opposed to other mining-focused issues (including acid rock drainage, impacts associated with underground workings, and different components of mining plants and facilities).

The focus of the provincial *Coal Act* is predominantly on licences and leases to land on which coal can be produced – therefore there are limited environmental enforcement provisions in the *Coal Act*.⁴⁷ Nevertheless, the *Coal Act* gives significant discretion to the Minister with respect to a breach of the *Mines Act* or mine permit. Where a breach occurs, there is no mandatory action required. Rather, the minister *may* send a notification letter to the proponent and *may* require him to comply with the conditions in the letter within a set period.⁴⁸ In sum, **the *Coal Act* adds few additional enforcement powers to what is available under the *Mines Act*.**

1.2.2 Chief Inspector of Mines Reporting

The Chief Inspector must submit an annual report “*showing results during the previous year in achieving the purposes of this Act*”.⁴⁹ This vague language is not clarified by any explicit requirements for enforcement reporting. As a result, the Chief Inspector's annual reports offer little more than general statistics on the number of orders issued, with limited details on the nature or subject of these orders. In addition, the details of the orders can only be accessed directly from the regional mines offices – this places a heavy burden on public involvement and makes the information largely inaccessible.⁵⁰ **The lack of data in the annual reports is further exacerbated by the lack of a published non-compliance reporting system.**⁵¹

The Chief Inspector's annual reports from 2000 through 2008 are posted on-line.⁵² The 2009 and 2010 were not available; hence the Chief Inspector is currently out of compliance with legal reporting requirements for the past two years. Nevertheless, the available reports provided some data to assess the overall state of enforcement under the Act. **For example, the number of mine visits reported showed a significant drop from over two thousand annually in 2001, to less than four hundred in 2004 before rebounding to just over one thousand visits in 2008 (only half the inspections done in 2001).** The Chief Inspector annual report data for surface coal mines also offers a telling story: on average, 70 inspections, 240 health and safety orders, and 116 dangerous occurrences were reported annually between 2000 and 2008. However, during this same period, environmental orders were only made in two of the reporting periods: nine orders in 2001 and three orders in 2003. Similar trends were observed for both underground coal mines, and surface and underground metal mines. Peaks in the number of environmental orders made occurred in 2002, along with slight increases in 2005. However, by 2008, the number of annual environmental orders at underground and surface mines dropped to close to zero again. This is particularly interesting considering the introduction of section 15(4.1) of the *Mines Act* in 2003, which was intended to allow for increased environmental protection through

enhanced compliance and enforcement authority.⁵³ All in all, the numbers support the previous contention that enforcement under the *Mines Act* is focused primarily on worker health and safety as opposed to environmental protection.

Timely site reclamation is essential for early mitigation of environmental impacts. Yet, the Chief Inspector annual reports provide troubling data on the Ministry's reclamation department. This department has a broad range of important responsibilities including the inspection of mine reclamation works and results. **The reports indicate that the number of reclamation staff has consistently dropped from a high of ten staff in 2000 to a low of three staff in 2007** (no data was reported in the 2008 annual report). **Up until March 2003, one reclamation inspector was based in each of the Cranbrook, Kamloops, Prince-George and Smithers regional offices.** However, **in March 2003, these positions were replaced by one position based in Victoria.** This move reflected the removal of the "district inspector" under the *Mines Act*, who had previously been responsible over a designated area within the province.⁵⁴

This loss of local inspectors further increases the burden on the limited enforcement resources by way of increasing travel and site access costs – it is notable that although the sole mine inspector is stationed in Victoria, there are currently only two operating mines on the island.⁵⁵ In addition, this sole position was only filled for a short period in 2003 before becoming vacant until 2005.⁵⁶ Support administrative staff also dropped from two to one in 2002 and the manager position was removed in 2004.⁵⁷ This staff reduction – both in Victoria and at the regional offices more closely located to mining activities – raises further serious questions on the ability of the provincial government to adequately enforce environmental protection provisions under the Act and associated permits.

Box 2: Previous owner liability & contaminated mine sites

A final comment regarding enforcement under the *Mines Act* pertains to the liability of previous owners and contaminated sites legislation. Under the *Mines Act*, only the current owner of a mine can be required to restore and remediate the site, or be held liable for such costs (ss.1, 10(8), 10(9)). Although previous owners or operators may be held liable under the provincial *Environmental Management Act* (EMA, s.45(1)(b)), this liability depends on the site being identified as a contaminated site (s.44). A site profile is one of the basic tools for identifying contaminated sites under the EMA; however, amendments to the *Mines Act* in 2002 removed the previous requirement to submit a site profile when applying for a permit or permit amendment (repealed s.10(10)). **This reduces the possibility that mines will be recognized as contaminated sites under the EMA.** The practical effect was evidenced by the government's reply to a recent Ecojustice submission requesting the determination of a contaminated site near the Quinsam coal mine (January 18, 2011). After a brief review, the ministry refused to approve the request. As such, the recognized elevated concentrations of arsenic and sulphate in downstream Long Lake remain unaddressed, with no remediation plan in place to reduce the associated environmental impacts.

1.3 General Environmental Legislation

1.3.1 Provincial Environmental Statutes

The BC Ministry of Environment's (MOE) continually deteriorating environmental enforcement history has been recognized in a number of reports.⁵⁸ These studies show the clear link between the number of enforcement actions and staff levels – **infrequent enforcement actions correlate closely to low staff levels**.⁵⁹ As documented later in this report, budgets for the MOE have been slashed – with the Environmental Protection budget slashed by approximately 75% in the last five years.⁶⁰ These substantial budget cuts are reflected in the amount of enforcement activity carried out.

The Conservation Officer Service (COS) is the enforcement arm of the MOE. Conservation officers are empowered to enforce various statutes, including the provincial *Environmental Management Act* and *Water Act*,⁶¹ and the federal *Fisheries Act*.⁶² Under the EMA, the Director is relatively restricted with regards to enforcement at mines. However, he does retain the power to issue a remediation order when asked to do so by the Chief Inspector or where the land or water use is “formally changed” from those approved under the mine permit.⁶³ Unfortunately, there is little evidence that the Director is using this provision as evidenced in the following table that lists **all the coal and metal mining related orders**, administrative sanctions, tickets, or convictions made under the EMA or *Fisheries Act* over the past four years.⁶⁴

Table 1: MOE enforcement actions taken against coal & metal mines in BC – 2006 to 2010

Issued to	Act & Section	Penalty	Description
2010			
-- none reported --			
2009			
Teck Cominco Metals Inc.	EMA s.6(2)	\$114,300 ⁶⁵	Teck Cominco discharged 900 kg of lead refinery electrolyte and 360 L of acid into the Columbia River following the failure of a heat-exchange unit at its lead and zinc refinery. Teck was convicted of introducing waste into the environment. ⁶⁶
Canadian Dehua International Mines Group Inc. (proposed Gething Coal)	Water Act s.93(2)(q)	\$0	Engineer's order for undertaking unapproved work in creek causing sedimentation (potential fish impacts). Order required cease of disturbance, preparation of a remediation plan, and carrying out and final reporting of remediation. ⁶⁷
2008			
Black Hawk Drilling	EMA s.6(3)	\$575	“Introduce waste into environment by prescribed activity” ⁶⁸
Cross Lake Minerals	EMA s.120(7)	\$575	“Fail to comply with terms of permit / approval” ⁶⁹
2007			
Pacific Metals Ltd. Vancouver	EMA s. 120(12)	\$575	“Contravene a requirement of the regulations respecting hazardous waste” ⁷⁰

Issued to	Act & Section	Penalty	Description
2006			
Teck Cominco Metals Ltd.	EMA s.79(5)	\$575	“Fail to immediately report spill; accidental discharge of sulphur dioxide into Columbia River; minimal impact on aquatic life” ⁷¹

Source: BC MOE Compliance and Enforcement Summaries

As shown above in Table 1, the reported enforcement actions have limited information about the harm caused by their offences. In addition, although a relatively heavy fine was recently given to Teck, this was the first of its kind and the small ticket fine of \$575 is the more common enforcement action.

Notably, a recent offence by a company working on the proposed Gething Coal mine resulted in a remediation order with no associated monetary penalty. This reflects the government’s approach to merely order offenders to return to compliance levels rather than actually imposing a fine or penalty for the offence.

In summary, there has been little improvement in environmental enforcement since 2000 when the former MOE acknowledged that *“achieving compliance has been primarily an ad hoc process involving sporadic public education and participation, largely unsubstantiated dependence on voluntary compliance, site and client specific negotiations, some monitoring and inspection and reactive enforcement initiated by public complaints.”*⁷²

1.3.2 Federal Environmental Statutes

The *Fisheries Act* and *Canadian Environmental Protection Act, 1999* are the primary federal environmental statutes that apply to mines at BC. The *Fisheries Act* is almost as old as Canada itself, having been enacted three years before BC entered confederation.⁷³ Under the *Fisheries Act*, there are several provisions that apply to environmental protection at mines. First, as discussed in section 1.1 above, any project that requires federal authorization to alter fish habitat is automatically subject to environmental assessment requirements under CEAA.⁷⁴ Second, s.35(1) of the *Fisheries Act* provides for fish habitat protection by prohibiting works or undertakings that result in its harmful alteration, disruption or destruction. A number of mines have been exposed to quasi-criminal liability under this provision.⁷⁵ However, this offence is subject to the defence of due diligence, which can have the effect of constraining successful prosecution even where environmental harm has occurred.⁷⁶ Finally, pollution is prevented by a general prohibition on the deposit of deleterious substances in water frequented by fish.⁷⁷ However, this prohibition is also subject to the defence of due diligence and may also be permissible if allowed by regulation. For example, with respect to mining, the *Metal Mining Effluent Regulation* (MMER) provides for the controversial practice of in-lake disposal of toxic tailings by re-classifying a natural lake as a tailings impoundment area.⁷⁸ In addition, although the MMER prescribes several substances as deleterious and set limits on their concentrations in metal mining effluent, the list is limited and does not currently cover some important substances commonly associated with mining activities such as sulphate, cadmium, or selenium.

Responsibility over the fish habitat and pollution prevention provisions of the *Fisheries Act* is split between the Department of Fisheries and Oceans Canada (DFO) and Environment Canada, respectively. The individual administration responsibilities are set out in a 1985 Memorandum of Understanding (MOU) between the two departments.⁷⁹ However, the federal Auditor-General recently recognized that the MOU is not being actively implemented by the two departments.⁸⁰ This suggests a significant gap in enforcement of provisions of the *Fisheries Act* – provisions that have great potential of strong environmental protection.⁸¹ Unfortunately, the federal government is generally reluctant to play a prominent role in industries that are often perceived as provincial projects – such as mines.⁸²

Pollution Prevention: Environment Canada

A recent report by the federal Auditor-General highlighted several deficiencies with Environment Canada's (EC) enforcement of the *Fisheries Act* pollution prevention provisions. For instance, to date there has been no follow-up on the recommendations of a *Fisheries Act* working group established by the department in 2005. That group observed EC's lack of management structure to administer the *Fisheries Act* and recommended a plan of action to address these priorities. Since responsibility for implementing the group's recommendations was never assigned, the situation remains unaddressed.⁸³

In 2009, EC's Audit and Evaluation Branch conducted an evaluation of the department's enforcement program between 2004 and 2008.⁸⁴ This evaluation recognized that "*reliable data on compliance rates were unavailable*" even though the desire to measure performance outcomes had been acknowledged since the establishment of the Enforcement Branch.⁸⁵ Further, interviewees noted that performance information was rarely requested by senior management for decision-making purposes.⁸⁶ Deficiencies were also observed in the National Enforcement Management Information System and Intelligence System (NEMISIS) database, which was initially created to support the legislated compliance activities for all enforcement and intelligence related activities overseen by EC. To date, this system has failed to provide a reliable source of performance information.⁸⁷

The fact that the program was operating under resource constraints was also recognized by EC's audit branch.⁸⁸ Although staff levels increased during the evaluated time period, the annual number of charges "*declined considerably in 2006–2007 and 2007–2008, dropping by about one third from the levels in the previous two years. No explanation for the data trends was available from the Program.*"⁸⁹ In addition, **these increases in staff resources were recognized as still being insufficient for meeting increased enforcement requirements for various programs and regulations**, including the accelerated species recovery plans under the *Species at Risk Act*.⁹⁰ The following observations were also made on staff levels:

"As noted in the Program's Integrated Business and Human Resources Plan for the 2007–2008 fiscal year, a 1999 internal analysis recommended an increase to 357 enforcement officers to effectively deliver Environment Canada's mandate. The analysis also noted that, at that time, there were 20 regulations under CEPA. There are now well over 40 regulations under CEPA 1999 alone, and the regulatory burden on the Enforcement Program continues to expand."⁹¹ [emphasis added]

Finally, the audit branch also identified a lack of regulatory program oversight of section 36(3) of the *Fisheries Act* due to resource shortages.⁹²

Environment Canada has published enforcement statistics online. Select types of enforcement actions taken under the *Metal Mining Effluent Regulations* (MMER) and the earlier *Metal Mining Liquid Effluent Regulations* (MMLER) are listed in the following table.

Table 2: Enforcement activities reported under MMLER & MMER – 1998 to 2009

Year	Field / Site Inspections	Administrative Verification	Written Warnings	Investigations	Prosecutions	Convictions
1998-1999	34	547	1	1	0	0
1999-2000	18	323	1	1	0	0
2000-2001	32	553	0	0	0	0
2001-2002	18	520	0	0	0	0
2002-2003	26	482	5	2	0	0
2003-2004	84	433	98	4	0	0
2004-2005	69	530	69	6	2	0
2005-2006	83	402	16	5	1	0
2006-2007	69	371	51	2	0	0
2007-2008	79	588	35	5	0	0
2008-2009	73	504	22	6	0	0

Source: *Fisheries Act*, National Statistics⁹³

NR = data not reported

“Administrative Verification” changed to “off-site inspections” in 2001-2002

“Field / Site Inspection” changed to “on-site inspections” in 2001-2002

There are several interesting trends that are depicted in Table 2. First, **since online reporting began in 1998, there have been no convictions under the MMLER or MMER.** Second, **the trend indicates a movement towards off-site inspections rather than on-site field inspections.** The dispersion of written warnings seems to correspond with the number of field inspections – this highlights the importance of field visits for adequate enforcement. Finally, spill and release occurrences were not reported until the 2006/2007 reporting period. However, once this data finally began being reported, it showed more than 20 spill occurrences annually suggesting stronger enforcement is needed to deter non-compliance.⁹⁴

Habitat Protection: Department of Fisheries and Oceans Canada (DFO)

Since the proposed Raven Mine is located upstream from Baynes Sound’s irreplaceable shellfishery, capacity to protect local shellfish is critical. However, the DFO’s enforcement of the *Fisheries Act* habitat protection provisions was recently criticised extensively by the federal Auditor-General. First, the Auditor-General acknowledged the missing evidence on monitoring of actual habitat loss. As a result, **there is a lack of knowledge on the success of mitigation measures**, which are legally required as a condition of project approval. The Auditor-General also recognized the lack of a systemic approach to assess a company’s compliance with its commitments for habitat loss compensation.⁹⁵ Second, **the Auditor-General found that DFO had reduced enforcement activity by half, and this reduction had not been offset by the hiring of new habitat monitors as was originally planned for 2006.**⁹⁶ Interestingly,

DFO blamed insufficient resources for a failure to take enforcement action in relation to a gravel removal incident in the Fraser River. In that case, the proponent exceeded the volume of gravel allowed to be extracted, destroying fish habitat, and mining outside the approved area.⁹⁷ Finally, although the government adopted a compliance and enforcement policy in 2001,⁹⁸ the Auditor-General recognized that eight years later **DFO remains unable to determine the extent to which it is progressing toward the Policy's long-term objective of a net gain in fish habitat.**⁹⁹

Sharing of enforcement responsibility is also occurring between different levels of government. The federal and provincial governments have entered into a harmonization process for inspection and enforcement activities undertaken to verify and ensure compliance with environmental protection laws.¹⁰⁰ This initiative was introduced by the Canadian Council of Ministers of the Environment (CCME) and seeks to reassign, by administrative agreement, the functional responsibility for Canada's environmental laws to one or the other level of government.¹⁰¹ This approach has been widely criticized as being based on a "*myth unsupported by any data*" that cost savings and improved environmental performance can be achieved.¹⁰² **A key challenge faced with this devolution of responsibility is the increased burden placed on already resource-poor provincial regulators.** In addition, there are concerns that once one level of government devolves its responsibility to another level, it progressively abandons the field, making it very difficult to return to its previous role.¹⁰³ The harmonization agreement also provides that the enforcement and inspection activities are to be carried out by the level of government that is "best situated".¹⁰⁴ Without further clarification, this raises potential confusion that may lead to neither level of government assuming the responsibility, especially where budget cuts hinder enforcement capacity. Finally, the importance of having environmental protection enforced by two levels of government is especially important where one level is financially involved with the project.¹⁰⁵ A useful approach would be to adopt provisions similar to the US coal laws that require federal inspectors to randomly accompany provincial inspector to ensure inspections are conducted adequately.¹⁰⁶

Canadian Environmental Protection Act, 1999

"A good law, however, is not enough. It must be enforced – ruthlessly if need be"

- Tom McMillan: former federal Minister of Environment (1998)¹⁰⁷

The *Canadian Environmental Protection Act, 1999* (CEPA) has been described as "*the principal piece of federal legislation for protecting the Canadian environment*".¹⁰⁸ In the past, it has been successful in enhancing environmental protection: for example, the listing of cadmium, lead and mercury as toxic substances under the Act resulted in over 75% reduction of each of these elements from the mining and smelting industry.¹⁰⁹ Environment Canada is responsible for enforcing this statute, although it shares this responsibility with the provincial MOE based on the previously discussed harmonization agreement. There are several relevant environment enforcement provisions under CEPA – however, the discussion here is limited to reporting requirements.

Under CEPA, owners or operators of facilities that meet published reporting requirements must report to the National Pollution Release Inventory (NPRI).¹¹⁰ **The NPRI is a potentially valuable tool for public disclosure of information about the releases and transfers of key pollutants from coal mines.**¹¹¹ It is a

contravention of CEPA 1999 for companies or persons required to report to fail to do so, or to knowingly submit false or misleading information; offenders may face penalties listed in the Act.¹¹² The following table provides a summary of published data on enforcement actions taken with respect to NPRI compliance. Note that this data covers all industrial, institutional and commercial facilities required to report under the NPRI; data specific solely to the mining industry was not available.

Table 3: Enforcement activities reported under NPRI – 1998 to 2009

Year	Total Inspections	Written Warnings	Prosecutions	Convictions
1998-1999	231	208	0	0
1999-2000	NR	NR	NR	NR
2000-2001	111	82	0	0
2001-2002	88	65	0	0
2002-2003	238	171	0	0
2003-2004	229	150	0	0
2004-2005	508	198	0	0
2005-2006	439	237	0	0
2006-2007	247	84	0	0
2007-2008	188	96	0	0
2008-2009	91	51	0	0

Source: Canadian Environmental Protection Act, 1999, National Statistics¹¹³

NR = data not reported

The most glaring information provided in Table 3 is the absolute lack of prosecutions or convictions for failure to comply with NPRI requirements since 1998. The number of written warnings also clearly correlates with the total number of inspections undertaken. As shown in Table 3, the number of inspections peaked six years ago and has dropped significantly since then. This is occurring even though the number of substances and facilities covered by NPRI continues to increase each year.¹¹⁴

Of great relevance to the Raven Mine proposal is the NPRI track record at the nearby Quinsam Coal Mine. This track record is not reassuring. A search of the NPRI database revealed an absence of data for the Quinsam Coal Mine. Upon inquiry, the government acknowledged that the mine has been flagged as a high priority for compliance follow-up, and compliance efforts were described as ongoing.¹¹⁵ However, the general lack of enforcement action for non-compliance with NPRI requirements (as depicted above in Table 3) raises serious questions about the ability of government to ensure that mines come into compliance with the legal requirement for public disclosure.

Problems with enforcement of NPRI were also recognized by the federal Auditor-General in 2009.¹¹⁶ Amongst other problems, the review revealed that EC was not routinely conducting on-site visits to verify facilities' data input.¹¹⁷ As such, even where facilities comply with the NPRI, there is little guarantee of the accuracy of the reported data.

1.4 Cost of Enforcement

In BC, **mine permits are issued free of charge.** As a result, costs for administration, investigation, and enforcement are covered by government and the public purse. These costs are often significant,

especially as the remote location of numerous mines entails expensive travel costs including large helicopter fees. Unfortunately, budget cuts at both the provincial and federal level seriously reduce the resources needed to carry out effective enforcement. Where lack of enforcement results in a failure to protect the environment, the value of short-term savings can be greatly outweighed by future costs of health care and environmental restoration.¹¹⁸ Table 4 provides a summary of operating expenses for the provincial Ministry of Energy, Mines and Petroleum Resources (MEMPR) and Ministry of Environment (MOE) from the past five provincial budgets.

Table 4: Ministry Resource Operating Expenses (\$000) – 2006 to 2010

Budget	Current Year Estimate	Plan for Year 2	Plan for Year 3
<i>MEMPR – Mining & Minerals</i>			
2006	14,807	13,309	13,309
2007	14,082	14,209	14,326
2008	14,037	14,154	14,154
2009	12,544	11,909	11,304
2010	10,744	9,917	9,917
<i>MOE – Environmental Protection</i>			
2006	40,485	40,488	40,488
2007	43,230	41,113	41,450
2008	43,334	43,286	43,287
2009	3,110	2,134	746
2010	9,304	10,166	10,166
<i>MOE – Compliance Operations</i>			
2006	17,797	17,797	17,797
2007	18,482	18,700	18,902
2008	19,961	20,165	20,165
2009	15,764	15,399	15,338
2010	15,327	15,264	15,264

Source: Ministry Service Plans – Resource Summaries¹¹⁹

As indicated in Table 4, there have been significant budget cuts to the MEMPR mining and minerals division, and to the MOE environmental protection and compliance departments since 2006. These continued budget cuts raise questions about the government's ability to maintain adequate enforcement capabilities at mines across the province.

These insufficient budgets also result in an inadequate number of government staff to carry out enforcement actions.¹²⁰ **For example, the number of staff employed by the MOE has dropped significantly from the late 1990's: in 1997, 2,145 staff were employed with the MOE, by 2004 this number had dropped by over half to a low of 947. The number of staff has since increased, but at 1,458 in 2010, the number of staff is still more than 100 people less than it was in the previous year and less than three quarters what it was in 1998.**¹²¹ Government staff themselves have pointed out human resource challenges that arise from the perceived **low pay for environmental enforcement officers**. This reportedly makes the recruitment and retention of qualified officers with the necessary

science degrees difficult.¹²² In addition, during the recent evaluation of Environment Canada's enforcement program Environmental Enforcement Directorate staff indicated that enforcement officers continue to have a **lack of expertise on the regulations to successfully proceed on a case**, even though officers are supposed to be sufficiently trained.¹²³

Finally, another important impact of these budget cuts is **reduced public disclosure**. For example, the MOE's Environmental Emergency Management Program reported that they will not be publishing its 2009-2010 annual report due to resource constraints.¹²⁴ This coincides with the lack of Chief Inspector of Mines annual reports from the last two reporting periods (as discussed above in section 1.2.2). Public disclosure is important for many reasons, including for keeping the local community informed on environmental conditions in their area and as an important deterrent for would-be polluters.¹²⁵ The loss of public disclosure further accentuates the problems that stem from inadequate resources.

1.5 Summary on Insufficient Enforcement

“[W]e haven't seen a good year of environmental enforcement for most of a decade.
Poor environmental enforcement is becoming the norm in BC.”

- West Coast Environmental Law (2009)¹²⁶

A recent survey of Canadians showed strong support for government enforcement of environmental laws. The same survey pointed out that more than three quarters of the population does not feel that Government is going far enough to meet its enforcement responsibilities.¹²⁷ However, Governments continue a general shift towards using voluntary responses to non-compliance.¹²⁸ This shift has been criticized by many, including the international OECD who commented that Canada's “*wide use of voluntary approaches has not always been effective or efficient.*”¹²⁹ In addition, Peter Krahn, former Head of the Inspections of Environment Canada's Pacific and Yukon Region and the current Operational Advisor for Environment Canada's Enforcement division has also recognized the problems with voluntary compliance. In a 1998 review of EC's enforcement initiatives, Krahn found:

“those industrial sectors which relied solely on self monitoring or voluntary compliance had a compliance rating of 60% versus the 94% average compliance rating for those industries which were subject to federal regulations combined with a consistent inspection program. Voluntary compliance programs and peer-inspection programs could not achieve satisfactory levels of compliance”.¹³⁰ [emphasis added]

Since Krahn made this finding in 1998, the number and complexity of environmental laws that apply to mines has increased significantly -- along with the vulnerability of natural ecosystems due to extensive mining activities and increased frequency of extreme weather events caused by climate change. Today it is more important than ever for environmental protection laws to be adequately enforced. Yet there is considerable evidence that the current enforcement regime is inadequate. For example:

- Conditions attached to Environmental Assessment Certificates are often written by proponents, are vague and unenforceable, and are not monitored over the life of the mine. Further, existing legislation that promotes concurrent approvals of mine operation licences with Environmental

Assessments sets short time periods for reviews, and practical experience shows that these concurrent reviews seldom, if ever, lead to the withholding of permit approvals.

- Mine permit conditions provide for inconsistent environmental protection, with lax enforcement of conditions and long delays before corrective action is taken. Government commonly responds to a company's failure to meet its permit conditions by simply relaxing the permit requirements.
- There is insufficient public reporting of non-compliances at mines in the province.
- The annual number of mine visits done by mine inspectors has dropped to half of what it was a decade ago. These inspections rarely result in environmental orders.
- The number of provincial government staff dealing with mine reclamation issues has dropped precipitously. Regional reclamation inspectors have been replaced by one inspector in Victoria, which is situated far from the province's important mining centres.
- The provincial MOE's enforcement actions often lead to trivial fines.
- Although Environment Canada recently increased enforcement staff, the department itself has acknowledged that its staff levels remain insufficient to meet increasing enforcement requirements under an expanding regulatory regime. In addition, there is an increasing trend towards off-site inspections as opposed to on-site field inspections.
- The federal Auditor General has highlighted deficiencies in Environment Canada's enforcement of *Fisheries Act* pollution prevention provisions, and the lack of coordination between Environment Canada and DFO. The Auditor General also concluded that DFO had reduced enforcement activity to enforce the *Fisheries Act* habitat provisions by half, without the intended offset of hiring new habitat monitors, as originally planned.
- Since online reporting began in 1998 there have been no convictions under the MMER (or former MMLER).
- Failure to comply with legal requirements to publicly disclose releases of key pollutants from industrial facilities in Canada (including mines) has not led to any prosecutions or convictions.
- The provincial MOE's Environmental Protection budget has been slashed by approximately 75% over the last five years. During the same time period, the MOE's Compliance Operations and the MEMPR's Mining and Minerals budgets have also been reduced. These budget cuts are reflected in the number of government staff, which is dramatically less than a decade ago.

Unfortunately the current lack of enforcement – combined with the willingness to relax permit conditions when faced with non-compliance -- runs counter to both public sentiment and sound environmental management. This places local communities and provincial taxpayers at significant risk.

2. Inadequate Securities

“[S]ecurity now being taken under the Mines Act is inadequate to remediate the known mines sites in BC where contamination exists.”

– BC Auditor-General (2003)¹³¹

The extensive environmental impact of mining operations, coupled with the fluctuating nature of mineral markets, makes it imperative that adequate funds are put aside to cover the cost of mine remediation should the mining company default on its obligations. Mine securities are a type of guarantee or damage deposit that the company provides to the provincial government to ensure that the costs of mine decommission and reclamation are borne by the mining company rather than by government and the public purse. **The need for adequate security is illustrated by the number of cases where government and the public purse, rather than the mining company, have ended up paying the bill for site reclamation.** The following table lists some of these examples.

Table 5: Costs paid by taxpayers to remediate mines in North America

Mine	Years of Operation	Environmental Concern	Total clean-up cost	Security posted	Amount paid by taxpayers
Union Mine (BC) ¹³²	1987-1989 (heap leach)	cyanide heap leaching	\$1 million	\$5,000	\$995,000
Mt. Washington Mine (BC) ¹³³	1964-1966	copper & ARD	> 6 million	\$0	> \$6 million
Britannia Mine (BC) ¹³⁴	1904-1974	heavy metals & ARD	\$99.3 million	\$30 million	\$69.3 million
Giant Mine (NT) ¹³⁵	1948-2004	arsenic trioxide	\$400 million	\$400,000	\$399.6 million
Faro Mine (Yukon) ¹³⁶	1969-1998	heavy metals & ARD	\$450 million	\$14 million	\$436 million
Zortman-Landusky Mine (Montana) ¹³⁷	1979-1998 (heap leach)	cyanide heap leaching	\$63.1 million	\$29.6 million	\$33.5 million
Summitville Mine (Colorado) ¹³⁸	1984-1993 (heap leach)	cyanide heap leaching	\$200 million	\$4.5 million	\$195.5 million

The remediation costs listed above in Table 5 provide a sobering view of potential long-term costs of mining activities. The costs listed for the Mt. Washington Mine do not include the independent contributions made by numerous individuals, the annual \$2 million loss from the destroyed Tsolum River salmon runs, or the possible long-term water treatment costs.¹³⁹ In addition, at the Britannia Mine the long-term water treatment costs are only covered for the next 20 years; after this time, additional taxpayer funds will be required to assess and carry out continued treatment.

The Mt. Washington and Britannia Mines operated before mine security requirements were legislated in BC. Since then, the province has incorporated security requirements into provincial mining legislation. However, **the requirement to post a security remains subject to the discretion of the Chief Inspector rather than being a mandatory requirement.**¹⁴⁰ This differs from other jurisdictions where security is

mandatory. For example, in Colorado, all applications for permits to conduct mining operations, regardless of size, are required to include a financial warranty in the amount determined pursuant to the Act.¹⁴¹ Other strengths and weaknesses of the mine security requirements in BC are discussed in the following sections.

2.1 Security Instrument

The security instrument is the form of guarantee used. A wide variety of instruments are available and the ultimate availability of funds depends on the type chosen. Generally, high-risk instruments – such as self-bonding and corporate guarantees – require diligent management and contingency procedures in case of bankruptcy, and they should be avoided. In BC, combinations of hard security and performance bonds may be accepted as security.¹⁴² However, the ultimate decision on what constitutes an acceptable instrument is left to the discretion of the Chief Inspector.¹⁴³ This discretion raises the potential for high-risk forms of security to be accepted. For example, the provincial Auditor-General has described the government’s past acceptance of charges on equipment and buildings (which depreciate over time) as a “questionable practice”.¹⁴⁴ One of the main problems with this practice is that these assets may also be subject to competing claims from other creditors, including employees (salaries) or the federal government (for income taxes owed).¹⁴⁵

Other jurisdictions limit the government’s discretion by mandating that certain considerations are taken into account in the decision process. For example, in South Dakota, the regulating authority must consider the operator’s financial status, assets within the state, facilities available to carry out the planned work and past performance on contractual agreements when determining the form of acceptable security.¹⁴⁶ Colorado recognizes that environmental conditions can quickly deteriorate, and trigger exponentially increasing reclamation costs. It is important that securities are easily and quickly convertible to cash. Therefore the state stipulates that any proposed form of guarantee can be rejected if it is not convertible to cash within 180 days.¹⁴⁷

2.2 Intended Uses of the Security

Under the *Mines Act*, the Chief Inspector is empowered to require that the mining company deposit security “in the amount and form satisfactory to the chief inspector”.¹⁴⁸ The purpose of the security is to cover costs for government to complete outstanding reclamation work if the company defaults on its obligations.¹⁴⁹ Mine securities may be required for the following purposes:

- mine reclamation;¹⁵⁰
- protection of, and mitigation of damage to, watercourses affected by the mine;¹⁵¹
- protection of, and mitigation of damage to, cultural heritage resources affected by the mine;¹⁵²
- carrying out mine permit conditions, orders and directions relating to above matters;¹⁵³ and,
- covering regulatory requirements of legislation, permits and approvals of other provincial agencies.¹⁵⁴

However, there are many other possible costs that are not fully covered under these provisions. For example, provincial policy requires 100% security be deposited for sites needing long-term ARD treatment.¹⁵⁵ This is of particular importance in BC where high-sulphur content ores are found across

the province. However, as a policy statement rather than legal requirement, little legal weight can be attached to this requirement. Furthermore, provincial policy explicitly states that the mine security does not cover *off-site* clean-up costs.¹⁵⁶ This unsecured liability may include a wide variety of damages including harm to buildings from blasting, and health and environment impacts from mine truck traffic.

Provincial policy also states that less than full security may be acceptable where the company's wealth greatly exceeds the liability of the mine site, and the company is considered a low risk to default.¹⁵⁷ However, there is no associated direction to consider the company's past performance before exposing the public purse to this increased level of risk. Conversely, in Australia's Northern Territory, the mining company's past and current performance records must be considered when calculating assurance.¹⁵⁸ Similarly, in South Dakota the governing authority must consider the financial and technical capability of the operator to respond to accidental releases when determining the amount of security.¹⁵⁹

Mine reclamation (as required in BC) re-establishes basic re-vegetation, but may not be sufficient to restore the local biodiversity. In the European Union, the importance of re-establishing biodiversity, rather than just basic vegetation, is recognized by the legal requirement that security be calculated based on various factors including measures to reinstate biodiversity.¹⁶⁰ No similar provision is provided under BC's mining law. This is of particular concern for the proposed Raven Coal mine that is located in close proximity to two important biodiversity corridors.¹⁶¹

Some jurisdictions have adopted progressive requirements for additional security at mine sites that employ **cyanide leaching or other toxic chemicals**. For example, in Oregon additional bonding is required for operations that employ toxic chemicals.¹⁶² In South Dakota, additional bonding ranging from \$25,000 to \$500,000 is required for mining operations that employ toxic chemicals.¹⁶³ No similar provisions are available in BC, although Table 6 (above) clearly highlights the heavy burden that mining with these toxic chemicals can place on the public purse.

Further, **no provision in BC mining law is made for unexpected occurrences**. Conversely, under the New Zealand *Resource Management Act*, security may be required to address "*adverse effects on the environment that become apparent during or after the expiry*" of the permit.¹⁶⁴ This ensures that costs for unexpected occurrences that are not considered at the initial permit application stage also be covered by the company rather than by government.

"The Raven project should not be allowed if it is going to disrupt the [shellfish] industry that is already in operation unless there is a large bond put in place to cover all losses of jobs and potential revenue that was sustainable for many generations to come"

- Public comment submission regarding the proposed Raven coal mine (2010)¹⁶⁵

Closely related to the problem with unexpected occurrences is the **lack of victim compensation coverage under the BC mine securities legislation**. This is particularly troublesome at the proposed Raven Coal mine where there are numerous surrounding activities and communities that depend on a healthy environment. These include traditional hunting and gathering activities, a thriving tourism industry, and the world renowned Baynes Sound shellfish industry that currently employs over 500 local

residents. Numerous examples are available of legislation that provides for victim compensation. One of the first victim compensation regimes to be implemented was the Japan 1973 *Law for the Compensation of Pollution-Related Health Injury*. This law establishes levies on polluters to distribute funds to victims of pollution-caused diseases such as Minimata disease, itai-itai disease, bronchitis, and asthma.¹⁶⁶ Closer to home, the environmental assessment panel for the ferrochromium smelter at Port Hardy called for the proponent to post a security to “provide for any clean-up operations that can be anticipated in a ‘worst case scenario’ and to provide compensation to parties who might be adversely affected”.¹⁶⁷

Administrative costs can also be a significant burden on the public purse. This is recognized in several jurisdictions, where an additional amount must be set aside to cover administrative costs. For example, in Colorado, the security must include an additional 5% to cover the cost of administration.¹⁶⁸ Similarly, requirements are in place in both Idaho and Washington. Once again, no similar provision is provided in BC law.

Finally, the Chief Inspector’s significant discretion under the *Mines Act* raises serious concerns about the adequacy of the security. A review of US securities revealed that **the lowest reclamation costs were estimated in states where the statutes were general and limited in scope, and the regulators were afforded substantial discretion as to their interpretation and application.**¹⁶⁹ In addition, where specific factors are not explicitly stated in the legislation, there is a potential for inconsistent requirements for different mine sites. Indeed, a recent cursory review by the author of nine coal mine permits in the province found such inconsistency – inflation requirements were specified in some of the permits, while omitted in others.

Where government authorities have significant discretion, public access to information on which decisions are based is especially important to ensure a transparent process. In BC, the mining company must submit an “estimate of the total expected costs of outstanding reclamation obligations over the planned life of the mine, including the costs of long term monitoring and maintenance”.¹⁷⁰ However, the Chief Inspector has the discretion to approve the filing of this information as a separate confidential report.¹⁷¹ Recent correspondence with a government employee revealed that most of the mines currently operating in BC have requested this confidentiality.¹⁷² As such, the public is unable to evaluate whether the cost estimate is reasonable and adequate to cover all necessary site remediation activities. When asked about the reason behind this confidentiality provision, the reply was that the costs are based on contractor rates that must remain confidential to protect competitive quotes. However, this reasoning raises significant concerns about the basic purpose of securities – their main purpose is to cover remediation costs should the company go bankrupt and be unable to fulfill its commitments. In fact, if the government must complete the site remediation, it is unlikely that they will be able to secure the same competitive prices on which the company based its reclamation calculations. Although there are no specific legal requirements in BC mandating the calculating of reclamation costs based on independent contractor rates, provincial policy offers some guidance. Policy documents on this issue state that “liability costs are generally based on government’s cost to do the work”,¹⁷³ and, where the government undertakes reclamation work, unit equipment rates set out in the “Province of British Columbia B.C. Hydro and Power Authority and B.C. Rail Ltd. Equipment Rental Rate Guide” apply.¹⁷⁴ This guide is publicly available, and therefore negates any need for confidentiality.¹⁷⁵ **As it currently stands,**

the public is unable to evaluate whether the cost estimate is reasonable and adequate to cover all necessary site remediation activities. It is untenable to keep such information secret, when this information is directly related to potential environmental and taxpayer liability.

2.3 Reviews of Securities

In January 2011, the author reviewed nine coal mine permits for security information. Although the proponent’s reclamation calculations were inaccessible for confidentiality reasons (as discussed above), the total value of security was publicly available. The following table describes the securities required under the mine permits and the chronological amendments (“amend”).

Table 6: Securities posted for 9 operating coal mines in BC (\$million)

Mine	Initial	Amend 1	Amend 2	Amend 3	Amend 4	Amend 5	Amend 6	Amend 7	Amend 8
Quinsam	\$0.4 (1986)	\$0.9 (1990)	\$1 (2010)	\$1.25 (2010)	\$1.5 (2011)	--	--	--	--
Fording River	\$0.6 (1978)	\$2 (1991)	\$4.5 (1992)	\$7 (1993)	\$7.91 (2010)	\$34 (2010)	<i>\$40 (2011)</i>	<i>\$46 (2012)</i>	--
Coal Mountain	\$0.11 (1978)	\$3.11 (1991)	\$3 (1994)	\$10 (2010)	<i>\$12.5 (2011)</i>	<i>\$15 (2012)</i>	--	--	--
Line Creek	\$0.15 (1981)	\$2.5 (1993)	\$3 (1994)	\$3.5 (1995)	\$4 (1996)	\$9 (2010)	<i>\$11 (2011)</i>	<i>\$13 (2012)</i>	--
Greenhills	\$0.2 (1983)	\$2.5 (1993)	\$3 (1994)	\$3.5 (1995)	\$4 (1996)	\$8.35 (2010)	\$13 (2010)	<i>\$14.5 (2011)</i>	<i>\$16 (2012)</i>
Willow Creek	\$0.15 (1998)	\$0.14 (2002)	\$0.19 (2004)	\$0.5 (2005)	\$2 (2009)	\$2.25 (2010)	\$3.5 (2010)	<i>\$4.75 (2011)</i>	<i>\$6 (2012)</i>
Brule	\$0.1 (2004)	\$0.2 (2005)	\$0.37 (2005)	\$0.49 (2006)	\$0.55 (2007)	\$1.48 (2007)	\$2.42 (2008)	\$3.35 (2009)	--
Wolverine	\$2 (2005)	\$7.22 (2007)	\$10.3 (2008)	\$11.5 (2010)	<i>\$12 (2012)</i>	--	--	--	--
Trend	\$0.18 (2005)	\$0.5 (2005)	\$2 (2006)	\$5.2 (2007)	\$6 (2007)	\$6.8 (2008)	--	--	--

Source: Mine permit files at BC Ministry of Natural Resource Operations (*securities not yet posted are italicized*)

There are numerous observations that should be drawn from information listed above in Table 6. First, a **number of mines continue to have remarkably small securities posted**, in light of the significant cleanup costs incurred elsewhere. Second, even for the larger securities now being required, it is important to note that **significant increases in security have only occurred recently**. Since this trend did not stem from any legislative amendments there is no guarantee that it will continue. Rather, the mining companies will likely strongly oppose any further increases for some time after 2012. In addition, the highest securities have been required of the massive Elk Valley coal mines.¹⁷⁶ In the associated permits it was noted that \$10 million of the posted security is earmarked for long-term water treatment. The sufficiency of this amount is questionable, particularly when compared to the cost of running the Britannia Mine long-term water treatment (\$27 million for only 20 years operation). The immense size

of the Elk Valley open-pit mines (as compared to Britannia’s underground workings), coupled with rising concerns about expensive selenium treatment raises further concerns about the adequacy of these securities.

“The volumes of material, metals and chemicals handled in the mining sector, and the long time period over which they can create contamination, suggest to us that adequate financial assurances are important to maintain and must be examined periodically” [emphasis added]

– BC Auditor General (2002)¹⁷⁷

Environmental conditions at mine sites are continuously changing as new ore bodies are developed. Therefore, it is important that securities are frequently updated to reflect changing conditions and environmental risks. To ensure consistency, the adjustment process should be well understood.¹⁷⁸ In BC, policy guidelines recommend that mine securities be reviewed every five years or whenever significant changes occur at the mine.¹⁷⁹ The Chief Inspector also has broad discretion to trigger a review of the security at any point in time.¹⁸⁰ In addition, whenever there is a proposed change of ownership, a new owner or operator must submit an application to the ministry to amend the permit in their name.¹⁸¹ The Chief Inspector may withhold approval of the transfer until he is satisfied that the new owner has sufficient security in place to cover the outstanding liabilities.¹⁸² This legal framework supports frequent reviews of securities; however, the data presented above in Table 6 shows how practical application differs significantly. As shown, **lapses ranging from ten to twenty years between reviews are common.**

The timeline of security requirements for the Quinsam Coal mine provides a disconcerting example of the inadequate and infrequent securities accepted by the government for mines in BC. The Quinsam mine commenced operations in 1986 at which time a security of \$400,000 was posted. Four years later, when underground operations began, the security was increased to \$900,000. In the ensuing decade, the mining company carried out a large mine expansion. Concurrently, an MOE study reported significant increases in sulphate concentrations in the downstream Long Lake from a low of 2 mg/L before mining began to 170 mg/L by 1997 (exceeding the provincial water quality criteria of 100 mg/L).¹⁸³ This increasing environmental risk was not accounted for by any corresponding increase in security. Finally, in 2001, in conjunction with a tailing dam raise, the security was increased by a mere \$100,000. The following year, another tailing dam raise was approved by the government. In 2006, the Phase 1 mine extension commenced, which was followed in 2009 by the 5S underground expansion into a high-sulphate ore body. However, it wasn’t until the following year that the government finally increased the security by a minimal \$250,000. Today, the security at Quinsam sits at only \$1.5 million.

Mines in BC are required to submit operational reclamation plans for the upcoming five years.¹⁸⁴ However, Quinsam has long been out of compliance with this requirement. The government has finally demanded that Quinsam submit their updated plan – if it isn’t submitted to the Ministry by June 30, 2011, an additional \$4 million will be added to the required security. Although this would increase the amount of security the government holds for the mine, at \$5.5 million it is still likely inadequate to cover long-term water monitoring and treatment costs at the mine.¹⁸⁵

2.4 Releasing the Security

The circumstances in which the security can be used by government must be clearly outlined to ensure accessibility when required. In BC, after giving notice to remedy the failure, the Chief Inspector may “*apply all or part of the security toward payment of the cost of the work required to be performed or completed*”.¹⁸⁶ Although this is a relatively strong provision, more stringent requirements are provided in other jurisdictions. For instance, some jurisdictions set time limits for commencing site reclamation. Montana legislation provides that the security may be forfeited where reclamation is not pursued in accordance with the reclamation plan within 30 days of notice of mine closure.¹⁸⁷

In BC, companies cannot remove or access the posted security without the approval of the Chief Inspector.¹⁸⁸ However, at the conclusion of mining, permit holders can submit a formal written request to the Chief Inspector for the return of the security.¹⁸⁹ Upon receipt of this request, a site inspection will be carried out. Once the Chief Inspector is satisfied that legal obligations have been fulfilled and there are no ongoing inspection, monitoring or maintenance requirements, the company will be released from all further obligations under the *Mines Act* and the security will be released.¹⁹⁰ **This process provides no opportunity for public input before the release of the security.** Conversely, in Montana, securities cannot be released until the public has been provided an opportunity for a hearing on the issue.¹⁹¹ Many states also allow affected citizens to appeal a bond release decision, with the bond held by government until the appeal decision is made.¹⁹² No similar opportunity for comment from the local affected community is provided in BC.

Even where all regulatory and permit conditions are met, there remains a strong possibility that environmental conditions will degrade after mine closure. This is evidenced by the occurrences at the Clinton Creek Mine in the Yukon Territory, where government had to undertake significant remediation efforts five years *after* the federal government had recommended that the security be returned to the permit holder.¹⁹³ Various jurisdictions have enacted specific provisions to account for this possibility. For example, in Wyoming, the *Environmental Quality Act* requires that up to 75 % of the security be released upon completion of reclamation, with the remaining 25% held for a minimum additional period of five years to assure proper re-vegetation and restoration of groundwater.¹⁹⁴ No similar provision is available in BC to provide for long-term contingencies.

2.5 Summary on Inadequate Securities

“[O]ur current security policy does not have the rigour (nor acceptance) to demand full security and to keep it maintained at a level to ensure government can reclaim / remediate a mine in the event of abandonment.”

- BC Energy, Mines and Petroleum Resources (2010)¹⁹⁵

Past experiences of taxpayer-paid mine clean-ups highlights the need of sufficient mine securities. Unfortunately, **the current legislative framework and significant discretion afforded to decision-making leaves BC’s public purse at risk.** The securities currently required at coal mines in the province do not adequately support the polluter-pays principle. The confidential reporting of reclamation estimates further threatens the transparency of the process.

The net liability for BC mines has been regularly reported in the provincial Public Accounts since 2003.¹⁹⁶ **Since then the liability has been steadily rising and in 2010 sits just short of \$600 million.** The total security for BC mines has been reported in the Chief Inspector annual reports, which are available up until 2008. When compared to the reported liabilities, **there was over \$100 million in unsecured liabilities each year from 2003 to 2008.** Coupled with the historic trend of insufficient amounts, infrequent reviews and inadequate security instruments, this raises serious concerns about the level of risk that BC residents are being exposed to from mining activities in the province. Government funds diverted to remediate mines adversely affect funding for other important government priorities, including public health and education.

“The Raven project should not be allowed if it is going to disrupt the [shellfish] industry that is already in operation unless there is a large bond put in place to cover all losses of jobs and potential revenue that was sustainable for many generations to come.”

- Public comment submission regarding the proposed Raven coal mine (2010)¹⁹⁷

Conclusion

The proposed Raven Coal mine in the Comox Valley is a contentious issue that has already raised significant opposition from the local community. The findings in this study raise additional concerns about the regulation of the mining industry in the province. Both industry and government often contend that mining activities will not harm the environment because strict standards will be followed both during and after operations. Unfortunately, the evidence suggests that compliance with these standards is not being adequately enforced.

Where inadequate enforcement results in environmental harm, there is a high cost to remedy that harm – and it is necessary to consider who will pay to fix the potentially long-term damage.

The inherent volatility of the minerals industry offers no guarantee that a financially strong company will remain stable long into the future. As a result, there must be adequate security set aside so that the government, and individual taxpayers, do not pay the costs of a company's past profits. Unfortunately, on this front as well, BC mining law is not adequately protecting the public purse.

These two concerns raise questions about Governments' current ability and commitment to safeguard the local ecosystem from a new coal mine in the Comox Valley. A final question posed in the Raven EA public comment period seems appropriate:

“Will mining be favoured over the shellfish industry, tourism, real estate, farming, the environment?”

- Public comment submission regarding the proposed Raven coal mine (2010) ¹⁹⁸

Endnotes

¹ The Tsable River watershed, which provides both drinking water and key wildlife linkages – is classified as one of four ‘critical watersheds’ in the Comox Valley Regional District’s Regional Growth Strategy: Comox Valley Regional District, Bylaw No. 120, *A bylaw to adopt the Comox Valley regional growth strategy* (March 29, 2011) page 34 & Map No. 4 - Regional Conservation Framework.

² WR Cullen & VW-M Lai, *An Environmental Investigation of the Quinsam Watershed – an Investigative Report* (Canadian Water Network, 2010), online: <http://www.greenwaystrust.ca/images/Environmental%20Investigation%20of%20the%20Quinsam%20Watershed.pdf>.

³ Karla Biagioni, “The Public Health Effects of Abandoned Coal Mine Workings on Residents in South Wellington, Nanaimo” in Martin J Bunch, V Madha Suresh & T. Vasantha Kumaran, eds., *Proceedings of the Third International Conference on Environment and Health* (Chennai, India; Department of Geography, University of Madras and Faculty of Environmental Studies, York University, 2003) 23.

⁴ L Barazzuol & G. Stewart, “Historic Mine Sites in British Columbia” (2003) BC Ministry of Energy and Mines Open File 2003-3: There are more that recorded 1,800 historic mine sites in BC.

⁵ Standing Committee on Environment and Sustainable Development, “Enforcing Canada’s Pollution Laws: The Public Interest Must Come First!” (1998) Government of Canada, at para 57, online: <http://www2.parl.gc.ca/HousePublications/Publication.aspx?DocId=1031521&Language=E&Mode=1&Parl=36&Ses=1>.

⁶ The primary government ministries at the federal level are the Department of Fisheries and Oceans (DFO) and Environment Canada. At the provincial level, the primary ministries are the Ministry of Environment and Ministry of Energy and Mines. The new provincial Ministry of Natural Resource Operations also plays a part; however, the scope of this ministry’s responsibilities is still relatively unclear.

⁷ *Mines Act*, RSBC 1996, c.293; *Environmental Management Act*, SBC 2003, c.53; *Fisheries Act*, RSC 1985, c.F-14; *Canadian Environmental Protection Act*, 1999, SC 1999, c.33.

⁸ *Environmental Assessment Act*, SBC 2002, c.43; *Canadian Environmental Assessment Act*, SC 1992, c.37.

⁹ For example, the *Antisipian Chemical Waste Control Regulation* (BC Reg. 300/90) helped reduce the aquatic discharge of toxic chemicals used as wood preservatives by the lumber industry by 90%: David R. Boyd, *Unnatural Law: Rethinking Canadian Environmental Law and Policy* (Vancouver: UBC Press, 2003) at 33.

¹⁰ Taku River Tlingit First Nation, “A Report to the BC Provincial Ministers of: Environment and Energy and Mines Re: The Environmental Assessment & Consultation Processes associated with the TCP – EA Amendment Process (Air Cushion Barge Alternative Access)” (2009) at 26, online: < <http://trtfn.yikesite.com/downloads/barge-final.pdf>>.

¹¹ Mark Haddock, *Environmental Assessment in BC* (Victoria: University of Victoria Environmental Law Centre, 2010) at v.

¹² Karen Campbell, Lisa Sumi & Alan Young, *Undermining the Law: Addressing the crisis in compliance with environmental mining laws in BC* (Vancouver: West Coast Environmental Law & Environmental Mining Council of BC, 2001) at 20.

¹³ *Environmental Assessment Act*, s.8; Environmental Assessment Office, *2009 User Guide* (Victoria: BC Government, 2009) at 28 & 33, online: http://www.eao.gov.bc.ca/pdf/EAO_User_Guide_2009.pdf [2009 User Guide]; Haddock, *supra* note 11 at 62.

¹⁴ Haddock, *supra* note 11 at 62.

¹⁵ B.C. Reg. 371/2002, s.4

¹⁶ *Ibid* at s.8(3).

¹⁷ *Ibid* at s.8(3)(b).

¹⁸ Haddock, *supra* note 11 at 67.

¹⁹ Haddock, *supra* note 11 at 68.

²⁰ *2009 User Guide*, *supra* note 13 at 37.

²¹ West Coast Environmental Law, *Please Hold. Someone Will Be With You: A report on diminished monitoring and enforcement capacity in the Ministry of Water, Land and Air Protection* (Vancouver: West Coast Environmental Law, 2004), at online: WCEL <<http://wcel.org/sites/default/files/publications/Please%20Hold%20-%20A%20Report%20on%20Diminished%20Monitoring%20and%20Enforcement%20Capacity%20in%20the%20Ministry%20of%20Water,%20Land%20and%20Air%20Protection.pdf>>

²² *Environmental Assessment Act*, ss. 33-47.

²³ *Haddock*, *supra* note 11 at 68.

²⁴ *Haddock*, *supra* note 11 at 69.

For example, the Redfern (Tulsequah Chief) mine company was supposed to be making annual payment of \$56,000 for collection of wildlife baseline data as part of EA certificate. However, aside from two initial payments, this commitment was not upheld: *Taku River Tlingit First Nation*, *supra* note 10 at 26.

²⁵ *Campbell et al.*, *supra* note 12 at 19.

²⁶ *Health, Safety and Reclamation Code for Mines in British Columbia*, BC Ministry of Energy, Mines and Petroleum Resources – Mining and Minerals Division, 2008 [Code].

²⁷ *Mines Regulation*, BC Reg. 126/94.

²⁸ *Mines Act* s.15(2)

²⁹ Mine permit PE-07008, s.4.

³⁰ Quinsam Coal Public Meeting Minutes, May 10, 2006;

Letter from BC Ministry of Water, Land and Air Protection to Quinsam Coal Corporation, dated June 14, 2004, File 2004-00334, PE-07008;

Quinsam Coal Corporation 1999/00 Monitoring Report at page iv;

Environmental Technical Review Committee Minutes November 24, 2004;

Letter from BC Ministry of Environment to Stan Goodrich and Gord McLaughlin of the Campbell River Environmental Committee, dated September 1, 2005, File PE-07008;

Environmental Technical Review Committee Minutes November 15, 2005.

³¹ BC Ministry of Environment, “3rd Quarter Compliance and Enforcement Summary for 2007” at 3, online: <http://www.env.gov.bc.ca/main/prgs/docs/qces_3rd_2007.pdf>.

³² The citizens claim the amendments were granted, but that the formal paperwork was not completed until July 2004, citing a telephone message from Environmental Technical Review Committee chairman in March 2005. This has not yet been independently verified. However, if correct, it may be that between December 1999 and July 2004, the company only paid for a 180 day permit (\$3,000 annually) as opposed to a 365 day permit (\$7,500). This could be a significant loss of government revenue when carried over four and half years.

³³ *Kitamaat Village Council v. British Columbia (Ministry of Environment, Lands and Parks)*, [1993] B.C.E.A. No.17, Comments.

³⁴ *Coal Mines Act* (1906), online: <http://www.coalking.ca/challenges/challenges_health.html>.

³⁵ *Mines Act*, ss.5, 6, 15(1).

³⁶ *Mines Act*, s.35(1): The legal requirements include any provision of the Act, the regulations, the Code, permit, or an order made under section 15 of the Mines Act.

³⁷ *Mines Act*, s.15(4)(d): Remedial action contained in an inspection report.

³⁸ *Mines Act*, s.35(2).

³⁹ BC Forest Practices Board, *Special Investigation 99002: Significant breaches of the Forest Practices Code along the power line corridor for the Kemess South Mine* (2000) at 21, online:

<http://www.fpb.gov.bc.ca/SIR04_Significant_Breaches_of_the_Forest_Practices_Code_along_the_Power_Line_Corridor_for_the_Kemess_South_Mine.pdf>: “In 1999, the Forest Practices Board investigated non-compliance issues related to the construction of the power line to the South Kemess mine in northern BC. Ineffective enforcement allowed the licensees to continue to delay corrective actions for extended periods. The Board found that while [the Ministry of Energy and Mines] issued corrective orders under the Mines Act, it failed to enforce those orders and stated that this was a “significant breach of government’s enforcement duties under the (Forest Practices) Code”.”

⁴⁰ *Mines Act*, s.37(2).

⁴¹ *Mines Act*, s.37(3);

There are some minor additional potential fines (\$500 to \$5,000) for “every day during which the offence continues to be committed after receipt of the notice”: *Mines Act*, s.37(4).

⁴² Nancy Bircher, “Making it Happen: The evolution of pulp and paper mill compliance in BC”, (1998) Fifth International Conference on Environmental Compliance and Enforcement, 73 at 76, online: <<http://www.inece.org/5thvol2/bircher2.pdf>>.

⁴³ *Mines Act*, s.10.

⁴⁴ *Mines Act*, s.37(3.1)(b).

⁴⁵ *Mines Act*, s.15(4.1);

A “detrimental environmental impact” is defined to be occurring when the quality of air, land or water substantially reduces the usefulness of the environment or its capacity to support life: *Mines Act*, s.1.

⁴⁶ *Mines Act*, s.15(4.1).

⁴⁷ *Coal Act*, SBC 2004, c.15;

Environmental enforcement at coal mines is largely covered under the *Mines Act*, which applies to both metal and coal mines (s.1 (definition of “mine”), s.2).

⁴⁸ *Coal Act*, s.25(1).

⁴⁹ *Mines Act*, s.36.

⁵⁰ *Campbell et al.*, *supra* note 12 at 31.

⁵¹ *Campbell et al.*, *supra* note 12 at 31; The Ministry of Environment does have this type of system in place.

⁵² Available online: <<http://www.empr.gov.bc.ca/MINING/HEALTHANDSAFETY/CI/Pages/default.aspx>>.

⁵³ Bill 10: Energy and Mines Statutes Amendment Act, 2003 (Hon. R. Neufeld), Debate at First Reading: 2003 Legislative Session: 4th Session, 37th Parliament, Hansard, Monday, February 24, 2003, Afternoon Sitting, Volume 11, Number 13;

Enacted in *Mines Act*, s.15(4.1).

⁵⁴ Section removed by the *Energy and Mines Statutes Amendment Act*, 2003.

⁵⁵ Myra Falls mine and Quinsam Coal mine.

⁵⁶ 2003 Chief Inspector of Mines Annual Report at 22;

2005 Chief Inspector of Mines Annual Report at 20.

⁵⁷ 2002 Chief Inspector of Mines Annual Report at 22;

2004 Chief Inspector of Mines Annual Report at 19.

⁵⁸ See, for example: Andrew Gage & Rika Saha, *No Response: A survey of environmental law enforcement and compliance in BC* (Vancouver: West Coast Environmental Law, 2007), online:

<<http://wcel.org/resources/publication/no-response-survey-environmental-law-enforcement-and-compliance-bc>>.

⁵⁹ *Campbell et al.*, *supra* note 12 at 27: “An increase in inspections from 1991 to 1995 coincided with a 17 per cent increase in MEM staff, which resulted from an expansion of the MEM budget in 1992/93.”;

Conversely, between 1995 & 2005, the number of enforcement actions by the COS dropped by more than a half which coincides with major staff cutbacks to staff during the same time: *Gage, supra* note 58 at 5.

⁶⁰ See Table 4 below.

⁶¹ *Water Act*, RSBC 1996, c.483.

⁶² *Conservation Officer Service Authority Regulation*, BC Reg. 318/2004, s.1(2).

⁶³ *Environmental Management Act*, s.68(2)(c).

⁶⁴ The sole data available on-line is from 2006, 2007, 2008, and the first two quarters of 2010.

See BC MOE Quarterly Compliance and Enforcement Summary, online:

<<http://www.env.gov.bc.ca/main/prgs/compliancereport.html>>.

⁶⁵ BC MOE Quarterly Compliance and Enforcement Summary (4th Quarter, 2009) at 2: \$55,000 to the Columbia River Integrated Environmental Monitoring Program; \$55,000 to the Upper Columbia White Sturgeon Recovery Initiative. Note, this was the largest fine ever awarded on 1 count under the EMA.

⁶⁶ *Ibid.*

⁶⁷ BC MOE Quarterly Compliance and Enforcement Summary (3rd Quarter, 2009) at 4.

⁶⁸ BC MOE Quarterly Compliance and Enforcement Summary (4th Quarter, 2008) at 11.

⁶⁹ BC MOE Quarterly Compliance and Enforcement Summary (4th Quarter, 2008) at 11.

⁷⁰ BC MOE Quarterly Compliance and Enforcement Summary (4th Quarter, 2007) at 10.

⁷¹ BC MOE Quarterly Compliance and Enforcement Summary (2nd Quarter, 2006) at 7.

⁷² BC Ministry of Water, Land and Air Protection, *Compliance Approach: A Discussion Paper from the Compliance Working Group* (2000) at 2-3.

⁷³ BC Terms of Union, 1871.

⁷⁴ CEAA, Law List Regulations, SOR/94-636, Sch. I, Part I (1994) (listing ss. 35(2) and 37(2) of Fisheries Act subjects projects covered by these provisions to the requirements of CEAA).

⁷⁵ For example: *R. v. Equity Silver Mines Ltd.*, (1983), 3 F.P.R. 372 (B.C. Prov. Ct.) (acid mine drainage from waste rock dumps at open pit mine entering creek containing fish); *R. v. Westmin Resources Ltd.*, (1985), 4 F.P.R. 487 (B.C. Prov. Ct.) (treated effluent from metallurgical process discharged into lake killing fish under test conditions).

⁷⁶ *Fisheries Act*, s.78.6;
For example: *R. v. Jack Cewe Ltd.*, (1987), 4 F.P.R. 271 (B.C. Prov. Ct.) (company took all reasonable steps in the circumstances to solve environmental problems including participating in government committee which had not identified a problem with company's operations, complying with all government directions, and spending \$1.2 million on implementing environmental protection measures).

⁷⁷ *Fisheries Act*, s.36(3).

⁷⁸ *Fisheries Act*, ss.36(4), 78.6; *Metal Mining Effluent Regulations* (SOR/2002-222), Schedule 2.

⁷⁹ Office of the Auditor General of Canada, *2009 Spring Report of the Commissioner of the Environment and Sustainable Development to the House of Commons* (Ottawa: Minister of Public Works and Government Services Canada, 2009) at para 1.4, online: <http://www.oag-bvg.gc.ca/internet/English/parl_cesd_200905_01_e_32511.html#hd3a>: "The Department of Fisheries and Oceans is responsible for the administration and enforcement of the *Fisheries Act*. However, in 1978, the Prime Minister assigned responsibility for the administration of the pollution prevention provisions to the Minister of the Environment by way of an intergovernmental agreement."

⁸⁰ *Ibid* at 44 (For example, the MOU calls for regular, at least annual, meetings between senior officials to discuss operational, regulatory, and national policy considerations. These meetings are not held.)

⁸¹ For example, as a result of the *Petroleum Refinery Effluent Regulations* (C.R.C. 1978, c.828; enacted under the *Fisheries Act*), petroleum refineries reduced discharges of phenols by 74%, oil and grease by 72%, sulphides by 71%, ammonia nitrogen by 65%, and total suspended matter by 57% between 1980 & 1994; Similarly, the *Metal Mining Liquid Effluent Regulations* (C.R.C. 1978, c.819 ; enacted under the *Fisheries Act*) successfully encouraged the mining and smelting industry to decrease the release of pollutants to water: arsenic by 85%, cyanide by 94%, copper by 75%, nickel by 88%, zinc by 87%: *Boyd, supra* note 9 at 33.

⁸² *Boyd, supra* note 9 at 46.

⁸³ *Auditor General of Canada, supra* note 79 at para 1.88: "[The working group] has not met since 2006, and no one is clearly assigned the responsibility for action on the issues identified."

⁸⁴ Environment Canada, *Evaluation of the Enforcement Program* (Ottawa: Audit and Evaluation Branch of Environment Canada, 2009) online: <http://ec.gc.ca/doc/ae-ve/2009-2010/1076/toc_eng.htm>.

⁸⁵ *Ibid* at 4.2;
Environment Canada, Outcome Project Plan Template, Environmental Protection Enforcement Program (3A3h), September 19, 2005 at 16.

⁸⁶ *Environment Canada, supra* note 84 at 4.4.

⁸⁷ *Ibid*.

⁸⁸ *Environment Canada, supra* note 84 at 4.2 and 4.3: "Program management has highlighted a shortage of resources for reviewing regulations and developing integrated compliance promotion plans and regulatory enforcement plans for regulations, to ensure a coordinated approach to achieving compliance."

⁸⁹ *Environment Canada, supra* note 84 at 4.2 and Table 4 (A count represents each separate charge or allegation of guilt in a criminal action or each separate cause of action in a complaint).

⁹⁰ *Environment Canada, supra* note 84 at 4.4.

⁹¹ Environment Canada, *Integrated Business and Human Resources Plan for FY2007–2008*, June 2007, at 5-6.

⁹² *Environment Canada, supra* note 84 at 4.3.

⁹³ *Fisheries Act* national statistics available online: <<http://www.ec.gc.ca/alef-ewe/default.asp?lang=En&n=5A011974-1&parent=EB813923-DACE-48F1-8841-EB9EA166FC37&searchoffset=11&searchdisplaycount=10#resulttop>>.

⁹⁴ Spill / release occurrences under MMER: 29 (2006-2007); 20 (2007-2008); 22 (2008-2009).

⁹⁵ *Auditor General of Canada*, *supra* note 79 at para 1.24: There was no documentation available of how mitigation measures were arrived at in 90% of the project files.

⁹⁶ *Auditor General of Canada*, *supra* note 79 at Main Points.

⁹⁷ *Auditor General of Canada*, *supra* note 79 at para 1.40.

⁹⁸ *Fisheries Act, Habitat Protection and Pollution Prevention Provisions, Compliance and Enforcement Policy, 2001*, online: <<http://www.ec.gc.ca/alef-ewe/default.asp?lang=En&n=D6B74D58-1>>.

⁹⁹ *Auditor General of Canada*, *supra* note 79 at Main Points.

¹⁰⁰ CCME Inspections and Enforcement Sub-Agreement, online:

<http://www.ccme.ca/assets/pdf/insp_enfsubagr_e.pdf>;

Endorsed by CCME Council of Ministers, April 30-May 1, 2001, Winnipeg, online:

<http://www.ccme.ca/assets/pdf/insp_enfsubagr_e.pdf> at 1;

Canada – British Columbia Fish Habitat Management Agreement, online: <<http://www.dfo-mpo.gc.ca/habitat/role/141/1413/partagr-entpart/bc-cb-eng.htm>>.

¹⁰¹ *Standing Committee on Environment and Sustainable Development*, *supra* note 5 at para 5.

¹⁰² Peter Krahn, “Enforcement versus voluntary compliance: An examination of the strategic enforcement initiatives implemented by the Pacific and Yukon Regional office of Environment Canada: 1983 to 1998” (1998) 1 5th Conference on Environmental Compliance and Enforcement Proceedings 26 at 40: “The common inference that there is overlap and duplication of effort between federal and provincial enforcement agencies is not supported by the available data”;

Standing Committee on Environment and Sustainable Development, *supra* note 5 at para 123: “There is insufficient evidence of overlap and duplication of environmental regulations and activities between the federal and provincial/territorial governments, thus making it doubtful that greater administrative efficiency and cost savings would be achieved under the agreement. ... Rather than assuring that environmental practices and regulations of the two levels of government are complementary, the ultimate effect of the Accord and Sub-agreements will be to eliminate one level of regulations and practices”.

¹⁰³ *Standing Committee on Environment and Sustainable Development*, *supra* note 5 at para 116.

¹⁰⁴ *CCME*, *supra* note 100 at s.4.1.3 and 4.1.4.

¹⁰⁵ Greg Simmons et al., *Digging up Trouble: The Legacy of Mining in BC* (Vancouver: Sierra Legal Defence Fund, 1998) at 17: for example, the Kemess South mine is a situation where the provincial government is financially involved to an extent that its impartiality appears compromised; the presence of a second level of regulation provides the process at least some degree of balance.

¹⁰⁶ *Federal Mine Safety & Health Act of 1977*, s.103.

¹⁰⁷ Linda F. Duncan, “Enforcement and Compliance” at 347 to 389 in Elaine Hughes, Alastair R. Lucas, and William A. Tilleman “Environmental Law and Policy”, 3rd Edition (Toronto: Emond Montgomery Publications Limited, 2003) at 360: stated in tabling the Compliance and Enforcement Policy for the *Canadian Environmental Protection Act, 1999*.

¹⁰⁸ *Standing Committee on Environment and Sustainable Development*, *supra* note 5 at para 10.

¹⁰⁹ *Boyd*, *supra* note 9 at 33: Mining and smelting industry decreased release of pollutants to water: cadmium by 86%, lead by 78%, mercury by 93%.

¹¹⁰ *Canadian Environmental Protection Act, 1999*, ss.46(1) (information-gathering provisions, including provisions that allow the Minister of the Environment to request information on certain substances), 48 (the Minister shall establish a national inventory of releases of pollutants), 50 (this inventory shall be published in any manner that the Minister considers appropriate).

¹¹¹ Coal mines that must report to the NPRI are found on Natural Resources Canada's list of Coal Mines and have annual production that exceeds 200 thousand tonnes.

¹¹² *Canadian Environmental Protection Act, 1999*, ss.272-273.

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- ¹¹³ Data available online: <<http://www.ec.gc.ca/alef-ewe/default.asp?lang=En&n=5A011974-1&parent=EB813923-DACE-48F1-8841-FB9EA166FC37&searchoffset=11&searchdisplaycount=10#resulttop>>.
- ¹¹⁴ Office of the Auditor General of Canada, *2009 Fall Report of the Commissioner of the Environment and Sustainable Development to the House of Commons* (Ottawa: Minister of Public Works and Government Services Canada, 2009) at para 3.41, online: <http://www.oag-bvg.gc.ca/internet/English/parl_cesd_200911_03_e_33198.html>.
- ¹¹⁵ Personal correspondence with Dylan Morgan, Analyst, Reporting and Co-ordination Function, Pollution Data Division, Environment Canada, Email January 28, 2011.
- ¹¹⁶ *Auditor General of Canada*, *supra* note 114 at Main Points.
- ¹¹⁷ *Auditor General of Canada*, *supra* note 114 at para 3.37.
- ¹¹⁸ Tim Howard & John Richardson, *False Economy: The hidden future costs of cuts in regulatory services* (Vancouver: Sierra Legal Defence Fund, 2002) at 7 to 11: The public health crises in Walkerton, Ontario in 2000 and North Battleford, Saskatchewan in 2001, that were caused by drinking water contamination, offer important examples of future public costs associated with public health tragedies that were caused, in part, by insufficient government regulation and resourcing.
- ¹¹⁹ Available online: <<http://www.bcbudget.gov.bc.ca/default.htm>>.
- ¹²⁰ “An increase in inspections from 1991 to 1995 coincided with a 17 per cent increase in MEM staff, which resulted from an expansion of the MEM budget in 1992/93.”: *Campbell et al.*, *supra* note 12 at 27; Conversely, between 1995 & 2005, the number of enforcement actions by the COS dropped by more than a half which coincides with major staff cutbacks to staff during the same time: *Gage et al.*, *supra* note 58 at 15.
- ¹²¹ Public Accounts - Consolidated Revenue Fund Supplementary Schedules: Statement of Staff Utilization, online: <<http://www.fin.gov.bc.ca/archive/publicaccounts.htm>>: MOE staff: 2,145 (1997/98); 2,005 (1998/99); 1,785 (1999/00); 1,887 (2000/01); 1,346 (2001/02); 1,126 (2002/03); 1,004 (2003/04); 947 (2004/05); 1,095 (2005/06); 1,481 (2006/07); 1,551 (2007/08); 1,631 (2008/09); 1,458 (2009/10).
- ¹²² *Environment Canada*, *supra* note 84 at 4.2.
- ¹²³ *Ibid.*
- ¹²⁴ Ben Parfitt, “Ministry of Environment Cuts: Will that be oil with your water?” *Policy Note* (17 September 2010) online: <<http://www.policynote.ca/ministry-of-environment-cuts-will-that-be-oil-with-your-water/>>.
- ¹²⁵ RCMP Gazette, “Environmental crime: does deterrence work?” (2006) 68-3 RCMP Gazette, online: <http://www.gazette.rcmp.gc.ca/article-en.html?&article_id=283>.
- ¹²⁶ West Coast Environmental Law, “BC fails to halt collapse in environmental enforcement in 2009” *Environmental Law Alert Blog* (19 April 2010), online: <<http://wcel.org/resources/environmental-law-alert/bc-fails-halt-collapse-environmental-enforcement-2009>>.
- ¹²⁷ Ipsos-Reid, *Environment Canada Corporate Communications Survey*, 2007.
- ¹²⁸ *Duncan*, *supra* note 107 at 360.
- ¹²⁹ Organisation for Economic Co-operation and Development (OECD), *OECD Environmental Performance Reviews – Canada* (Paris: OECD, 2004) at 17.
- ¹³⁰ *Krahn*, *supra* note 102 at 26.
- ¹³¹ Auditor General of British Columbia, *2002/2003 Report 5: Managing Contaminated Sites on Provincial Lands* (Victoria: BC Government, 2003) at 43.
- ¹³² Personal Communication, D. Nichol of the BC MOE with B. Wylynko, 19 September 1991 in Calvin Sandborn, William J. Andrews, Brad Wylynko, *Preventing Toxic Pollution: Toward a British Columbia Strategy* (Vancouver: West Coast Environmental Law Research Foundation, 1991) at 125; BC MOE news release, “Ministerial declaration of an environmental emergency in June 1989” (12 June 1989); BCMEMPR Minfile Report for Union Mine, online: <http://minfile.gov.bc.ca/report.aspx?f=PDF&r=Minfile_Detail.rpt&minfilno=082ENE003>.
- ¹³³ The Mt. Washington Mine operated before security requirements were in place in BC; Between 1988 and 1992, the provincial government paid \$1.5 million for remediation. In 2008, the provincial government paid an additional \$4.5 million for remediation; In 2008, after years of advocacy by concerned citizens in the Comox Valley, the Provincial governments committed \$4.5 million taxpayer dollars toward measures to address water quality issues resulting from 40 years of AMD: BC Environment Report, “Mine Remediation on Mt. Washington”, June 2008,

online:

<http://www.eneletters.gov.bc.ca/ENV/Environment_Report/June_2008/Mine_Remediation_on_Mt_Washington/article>;

Wayne White & Alvin Tong, "Mount Washington Mine Remediation Project – Construction Phase", in William Price et al., eds., Proceedings of the 34th Annual BC Mine Reclamation Symposium and 35th Annual Canadian Land Reclamation Association Meeting (Courtenay BC, September 20-23, 2010).

¹³⁴ The Britannia Mine operated before security requirements were in place in BC; The provincial government secured \$30 million from previous owners and operators at the Britannia Mine in exchange for a provincial guarantee that they would not be held liable for future issues with the site. EPCOR will operate a water treatment plant for 20 years at the cost of \$27.2 million (under a private-public partnership), online:

<http://www.bcomm.ca/history/britannia_story.html>.

¹³⁵ MiningWatch Canada, "Taxpayers to Pay for Clean-Up at Northern Mines: MiningWatch Canada and Regional Organizations Call for Preventive Measures" (2 September 1999), online:

<<http://www.miningwatch.ca/en/taxpayers-pay-clean-northern-mines-miningwatch-canada-and-regional-organizations-call-preventive-measures>>;

Nathan Lemphers, Simon Dyer and Jennifer Grant, *Toxic Liability: How Albertans Could End Up Paying for Oilsands Mine Reclamation*, (Drayton Valley: The Pembina Institute, 2010), online: <<http://pubs.pembina.org/reports/toxic-liability-report.pdf>>.

¹³⁶ *Mining Watch*, *supra* note 135.

¹³⁷ *Mining Watch*, *supra* note 135.

¹³⁸ US EPA Memorandum re Region 10 Mining Financial Assurance Strategy, online:

<[http://yosemite.epa.gov/R10/ECOCOMM.NSF/b8b7c39a103a235088256c3e007a4dd9/74d70c3512661df988257402006d039a/\\$FILE/R10%20Mining%20Financial%20Assurance%20Strategy.pdf](http://yosemite.epa.gov/R10/ECOCOMM.NSF/b8b7c39a103a235088256c3e007a4dd9/74d70c3512661df988257402006d039a/$FILE/R10%20Mining%20Financial%20Assurance%20Strategy.pdf)>;

Earthworks, "Summitville Gold Mine, Colorado" online:

<http://www.earthworksaction.org/summitville_goldmine.cfm>.

¹³⁹ Discussions with remediation workers in September 2010 indicated that monitoring will be completed after the recent site capping activities to determine whether additional long-term water treatment is required. Tsolum River historically had large salmon runs worth over \$2 million/year in 1995 dollars.

¹⁴⁰ *Mines Act*, s.10(4).

¹⁴¹ Colorado Revised Statutes – Title 34: Mineral Resources, s.34-32-117(3)(a).

¹⁴² BC Ministry of Energy and Mines, *Performance Bonds Policy*, at II(2), (4), III, online:

<<http://www.empr.gov.bc.ca/Mining/Permitting-Reclamation/Pages/PerformanceBondsPolicy.aspx#v>>: Hard security includes cash, irrevocable letters of credit, fully registered marketable bonds issued and/or guaranteed by the Government of Canada or the provincial government, treasury bills, guaranteed investment certificates, and term deposits with up to three-year terms; Canada Savings Bonds and surety bonds are not accepted; BCMEMPR, *Guide to Processing a Mine Project Application under the British Columbia Mines Act*, (Victoria: Mining and Minerals Division, BCMEMPR, 2009) at 18.

¹⁴³ *Mines Act*, s.10(4).

¹⁴⁴ *Auditor General of British Columbia*, *supra* note 131 at 43.

¹⁴⁵ BCMEMPR, *Mine Reclamation Security Policy in British Columbia: A Paper for Discussion* (Victoria: BCMEMPR, 1995) at 16.

¹⁴⁶ South Dakota Codified Laws, s.45-6B-22, online:

<<http://legis.state.sd.us/statutes/DisplayStatute.aspx?Type=Statute&Statute=45-6B-22>>.

¹⁴⁷ Colorado Revised Statutes – Title 34: Mineral Resources, s.34-32-117(3)(c)(II).

¹⁴⁸ *Mines Act*, s.10(4).

¹⁴⁹ BCMEMPR, *supra* note 145 at 3.

¹⁵⁰ *Mines Act*, s.10(4)(a).

¹⁵¹ *Mines Act*, s.10(4)(b).

Note: "Financial assurance for mine reclamation is only as strong as the definition of mine reclamation": Jim Kuipers, *Putting a Price on Pollution: Financial Assurance for Mine Reclamation and Closure* (Mineral Policy Centre, 2003) at 25.

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- ¹⁵² *Mines Act* s.10(4)(b) – this section of the provision was added by Energy And Mines Statutes Amendment Act, 2003 (2003-1-8) effective June 20, 2003 (BC Reg 234/2003) – Hansard does not provide reason for this amendment; Cultural Heritage resources is defined as in the *Mineral Tenure Act*, RSBC 1996, c.292, s.1 as: “an object, a site or the location of a traditional societal practice that is of historical, cultural or archaeological significance to British Columbia, a community or an aboriginal people”.
- ¹⁵³ *Mines Act*, s.10(5).
- ¹⁵⁴ *BCMEMP*R Guide, *supra* note 142 at 17.
- ¹⁵⁵ *Ibid*: Policy for 100% security at mines with ARD.
- ¹⁵⁶ *Ibid*.
- ¹⁵⁷ *Ibid*.
- ¹⁵⁸ C. George Miller, *Financial Assurance for Mine Closure and Reclamation*, (Ottawa: International Council on Mining & Metals, 2005) at 58.
- ¹⁵⁹ South Dakota Codified Laws, s.45-6B-20.1, online: <<http://legis.state.sd.us/statutes/DisplayStatute.aspx?Type=Statute&Statute=45-6B-20.1>>.
- ¹⁶⁰ Commission Decision 2009/335/EC on the technical guidelines for the establishment of the financial guarantee in implementation of Article 22(1)(c) of Directive 2006/21/EC (adopted on 20/04/09, published on 21/04/09).
- ¹⁶¹ *Supra* note 1.
- ¹⁶² Oregon Revised Statutes, c.517 (Mining and Mining claims), s.517.840(2), online: <<http://www.leg.state.or.us/ors/517.html>>.
- ¹⁶³ James R. Kuipers & Cathy Carlson *Hardrock Reclamation Bonding Practices in the Western United States*, Summary Report for the National Wildlife Federation, Boulder, Colorado, February 2000, at 2, online: <<http://www.csp2.org/REPORTS/Hardrock%20Bonding%20Report%20Executive%20Summary.pdf>>.
- ¹⁶⁴ New Zealand Resource Management Act 1991, s.108A(2)(d), online: <<http://www.legislation.govt.nz/act/public/1991/0069/latest/DLM234838.html>>.
- ¹⁶⁵ Public Comment (Raven EA – Cmt No. 25, Msg No. 8).
- ¹⁶⁶ Kōgai Kenkō Higai Hoshō Hō [Pollution-Related Health Damage Compensation Law], Law No. 111 of 1973.
- ¹⁶⁷ B. Williams, P. West & G. Davies, *Port Hardy Ferrocromium Review Panel: Final Report* (Vancouver: Federal Environment and Review Office, 1991) at 106-108.
- ¹⁶⁸ Colorado Revised Statutes, s.34-32-117, online: <<http://www.michie.com/colorado/lpext.dll?f=templates&fn=main-h.htm&cp=>>>.
- ¹⁶⁹ *Kuipers*, *supra* note 163.
- ¹⁷⁰ *Mines Code*, s.10.1.4(8).
- ¹⁷¹ *Mines Code*, s.10.1.4(8).
- ¹⁷² Personal correspondence with Kim Bellefontaine (January 2011).
- ¹⁷³ *BCMEMP*R Guide, *supra* note 142 at 17.
- ¹⁷⁴ *BCMEMP*R, *Mine Reclamation Costing and Spreadsheet*, Version 3.5.1, January 2006, at 8, online: <http://www.empr.gov.bc.ca/Mining/Permitting-Reclamation/ApplicationForms/AnnualReclamationReports/Documents/costing_manual.pdf>.
- ¹⁷⁵ Blue Book, online: <<http://www.roadbuilders.bc.ca/bluebook.php>>.
- ¹⁷⁶ The Elk Valley coal mines in Table 6 are Fording River, Coal Mountain, Line Creek, and Greenhills.
- ¹⁷⁷ *Auditor General of British Columbia*, *supra* note 131 at 43.
- ¹⁷⁸ *Miller*, *supra* note 158 at 4.
- ¹⁷⁹ “*BCMEMP*R Guide, *supra* note 142 at 17.
- ¹⁸⁰ *Ibid.*, at 17-18.
- ¹⁸¹ *Mines Act*, s.11.1(b).
- ¹⁸² *BCMEMP*R Guide, *supra* note 142 at 17-18.
- ¹⁸³ *BCMWLAP Chemical and Phytoplankton Changes associated with coal mining in vicinity of Long Lake, Campbell River, BC* (December 2002): sulphate data; Sulphate is commonly associated with coal mining operations – it is used as an indicator of potential impacts on receiving environment by mining activities. Under acidic conditions, metal sulphides are converted to soluble sulphates and associated metals (e.g. arsenic) are rendered more soluble resulting in metal leaching.

¹⁸⁴ Code, s.10.1.4(6).

¹⁸⁵ This is especially true when considering remediation costs for the recognized arsenic and sulphate impacts in the downstream Long Lake (*supra* note 2).

¹⁸⁶ *Mines Act*, s.10(8)(b).

¹⁸⁷ *Kuipers*, *supra* note 163 at 2.

¹⁸⁸ *BCMEMP*R Guide, *supra* note 142 at 17-18; Code ss. 10.6.14, 10.6.15, 10.7.31.

¹⁸⁹ Code, s.10.6.15.

¹⁹⁰ *BCMEMP*R Guide, *supra* note 142 at 25.

¹⁹¹ Montana Code Annotated 2009, s.82-4-338 (5).

¹⁹² A. Warhurst & L. Noronha, *Environmental Policy in Mining: Corporate Strategy and Planning for Closure* (Washington: Lewis Publishers, 2000) at 337; For example, the New Mexico Annual Statutes, s. 69-36-7.R(2).

¹⁹³ Yukon Government, *Abandoned Mines*, online:

<http://www.emr.gov.yk.ca/aam/pdf/cc_timeline_july2010.pdf>.

¹⁹⁴ Wyoming, the Environmental Quality Act, s.35-11-417(e), online:

<<http://legisweb.state.wy.us/statutes/statutes.aspx?file=titles/title35/t35ch11.htm>>.

¹⁹⁵ WR Cowan, WO Mackasey & J Robertson, *The Policy Framework for Mine Closure and Management of Long-term liabilities: A Guidance Document* (Sudbury: National Orphaned / Abandoned Mines Initiative, 2010) at 98.

¹⁹⁶ Net liabilities for BC Mines: Data reported in the Province of British Columbia Public Accounts (excludes abandoned mines), online: <<http://www.fin.gov.bc.ca/archive/publicaccounts.htm>>.

¹⁹⁷ Public Comment (Raven EA – Cmt No. 25, Msg No. 8).

¹⁹⁸ Public Comment (Raven EA – Cmt No. 1724, Msg No. 380).