

**Compliance Energy Corporation's
Raven Underground Mine
Job Projections - A Closer Look**

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Summary:

The purpose of this report is to contribute to the assessment of the economic impact on the Comox Valley of Compliance Energy's proposed Raven Underground Mine. It builds on Kuyek's socio-economic review of the mine's costs and benefits to communities in the Comox Valley by providing a focus on the proposed jobs in the mine itself (Kuyek, April 2012). It is in part based on a 12 month review of coal industry job ads, and does not analyze proposed construction or Port Alberni coal port jobs. The report presents a detailed discussion of the company's employment projection that is unlikely to be presented by the company in its forthcoming Application and Environmental Impact Statement.

The report looks at six questions about the proposed jobs at Compliance Energy's Raven underground coal mine. The first two sections examine the extent to which Compliance's promises of full-time employment and wage levels are likely to be accurate. The third and fourth sections examine who might be hired at the mine, and whether those workers are likely to be found in the Comox Valley. The fifth section outlines concerns about the health and safety of the jobs, and the sixth discusses the likelihood of spin-off jobs being in the Comox Valley. The report's findings are as follows.

Numbers of Jobs: It is highly unlikely that Raven mine will operate at full employment of 350 jobs for a full 15.5 years. The mine will not be in full production for several years as it opens up the rock face, nor will it be in full production at all times after that, depending on conditions found underground. It is much more likely that the number of jobs will be variable, with a smaller number of core full-time jobs and fluctuating numbers of shorter-term positions.

Hourly Wages and Salaries: The company proposes that its workers will be paid an average wage and benefits package of \$100,000/year. The larger numbers of hourly workers will be paid less than the smaller group professional salaried staff and managers. Compliance's estimate for hourly workers is higher than wages in comparable jobs. Wages are most likely to come close to the company's proposal if the mine is organized by a strong, credible union.

Who might be hired?: All job ads surveyed required that professionals, technicians and trades workers meet specific certification qualifications and have previous experience in a comparable mine environment. Labourer positions required high school diplomas plus two or three years comparable experience. Very few women are hired in the mining industry. The requirement of experience is an important safety component.

Are experienced workers in the Comox Valley?: There is a shortage of experienced underground mine workers in BC and Canada and very few people who are likely to qualify live in the Comox Valley. Those who do qualify are most likely to be already employed. It is probable that people from outside the region or the country will fill the positions.

Job Quality: Underground coal mines are still among the most dangerous workplaces on the continent. Along with the ever-present threat of explosion and collapse, there are high rates of non-fatal injuries and an increase in the incidence of "miner's lung disease". Processing plant and transportation workers are vulnerable to increased rates of cancer. Factors in other mining incidents that raise concerns about the Raven mine proposal include: mine standards that do not reflect conditions in previously mined geographical areas; retreat pillar mining; inexperienced management; and lax government enforcement of safety regulations.

Will 400 - 500 spin-off jobs stay in the Comox Valley?: Only a small proportion of spin-off jobs are likely to be in the Comox Valley or Vancouver Island. Most of the spin-off jobs will be related to the capitol spending on the mine, and will be in the manufacturing of mine equipment, which takes place all over the world. Mine workers could live within commuting distance anywhere between Nanaimo, Port Alberni and Campbell River. While they will spend a certain amount of their wages on local goods and services such as housing, food, entertainment and recreation, the extent of this spending will depend on whether the company hires workers temporarily or permanently from other provinces or countries. Increased public services required by these workers would create added demand, but the government has not promised added public sector jobs.

1. Will there be 350 full-time mining jobs for 15.5 years?

Compliance Energy's proposal states that the mine will:

"... create 200 construction jobs and 350 well-paying, full-time mine, port and transportation jobs in the Port Alberni and Comox Valley areas. The mine will pay an average salary of \$100,000 per year including benefits." (Pincock, 2011).

The claim that there will be 350 full-time jobs originates in the mine's *Technical Report*, which is intended to provide the framework for assessing whether the mine is viable by estimating maximum operating costs. It is an essential planning tool for mine managers and investors, but should not be understood as a hard promise (Pincock, 2011).

It is highly unlikely that Raven mine will operate at full employment of 350 jobs for a full 15.5 years. It is more likely that the numbers of jobs will be variable over the course of the project, with a much smaller number of core full-time jobs, and fluctuating numbers of shorter-term positions.

There are several reasons why all 350 jobs may not materialize:

- Compliance's *Technical Report* itself indicates that the numbers of workers will be variable: the staging timelines indicate that the mine would not be in full production until at least a year after the first shaft is opened, and would slow down again in its final year.
- The *Report* also makes it clear that productivity at all stages would be uncertain and would be dependent on the conditions found as the mining progresses, including unknown groundwater conditions and difficulties working with steep slopes and narrow seams.
- Further, the industry is potentially on the cusp of further technological innovation, including underground robotics, which over the life of this mine could reduce the numbers of workers needed.

Quinsam Underground Coal Mine has delivered approximately half of its promised jobs.

People in this part of Vancouver Island have direct experience with the inaccuracy of mining jobs promises. The history of employment at Campbell River's Quinsam mine illustrates how overstated they can be.

When the mine was approved in 1984, Quinsam promised 248 full-time permanent jobs (Industry Canada still reports this figure). In reality, however, the number of jobs has not come anywhere close to this figure: no more than 50 workers were employed through the 1980s. In the 1990s jobs ranged from 75 to a peak of 230 in 1998. Then the number of jobs dropped to fewer than 50, increased again to 100 in 2006 and now stands at approximately 140 (Brazier 2012).

2. Will the wages and benefits packages really average \$100,000 each?

Compliance's *Technical Report* estimates average rates for labour and hourly workers in excess of \$31/hour or \$64,480/year, plus 7.5 percent overtime, plus 41 percent benefits. The estimate for salaried workers is an annual salary of \$76,000/year plus 40 percent benefits and overhead. (Pincock 2011, pg. 22.38)

From November 2011 to October 2012 this study conducted a review of North American job ads and collective agreements for mining workers in order to assess Compliance's claim that their workers would receive salary and benefits packages of \$100,000/ year. Figure 1 provides a summary of this review.

While the jobs are likely to be relatively well paid, certainly not all of the proposed 350 permanent workers would be paid at this level.

- The most obvious point is that this figure is a projected average of all hourly wages and yearly salaries, including those of professionals and managers. Hourly workers are paid considerably less than professionals and managers.
- The figure of \$100,000/year for mining labour costs is often used by government and the mining industry. This industry average includes incentives for workers to live in remote communities. It is likely that Compliance will not need to pay incentives to encourage workers to live on Vancouver Island.
- Compliance Energy's proposed pay is higher than the salaries found in our search, which again suggests that the proposal is a maximum figure, for the purposes of planning. Unless Compliance intends to be unusually generous, it is more likely that wages will reflect the lower levels paid elsewhere. For example, the majority of the underground hourly paid positions could well be paid at a rate 19% to 53% lower than the \$64,480 base projected by Compliance.
- Detailed comparisons of hourly wages are not easily made because there are only three operating underground mines in Canada. The most direct comparison available is with jobs at Quinsam mine in Campbell River. Quinsam is organized by the United Steelworkers and pays higher wages than those we found in the general job ads. HD mines is just starting up an underground coal mine near Tumbler Ridge in northern B.C. The company is apparently not able to find Canadian workers at any salary level who are qualified or prepared to work there (see discussion below).
- Compliance's wages and benefits proposal could encompass pay and benefits that are similar to those at the Quinsam mine, but this is likely to become reality only if the Raven project is organized by a strong, credible union. It must be assumed, however, that this will happen only after a first contract is negotiated. Unionization and negotiating a first contract could take several years.

Table 1: Wage levels by employer, from the highest paid to the lowest, for mine operations & coal plant workers (225*), truck drivers (50*) and security workers (8*):

Compliance Energy	proposed \$64,480/year plus 40% benefits
Teck Coal at Sparwood	open pit coal miners: between \$53,000 and \$78,000/year (Teck 2011)
Quinsam Mine	underground and processing plant hourly : between \$45,000 and \$70,00/year (Quinsam 2010).
Various US and Canadian open pit coal operations	between \$32,000 and \$65,000/year (see Sources: Job Search sites).

Sources: Job Search sites

* Numbers of jobs proposed by Compliance Energy

Table 2. Labour market salaries, by position for salaried staff (28*)

Mine manager	between \$120,000 and \$200,000/year.
5 managers & superintendents and 5 supervisors	between \$80,000 and \$110,000/ year
4 engineers & technical staff	an average of \$70,000/year
13 administrative and clerical staff	an average of \$50,000/year

Sources: Job Search sites

* Number of jobs proposed by Compliance Energy

3. Who might be hired at the mine and processing plant jobs?

Qualifications for North American hourly positions in underground coal mines range according to occupation. Maintenance (trades) workers, heavy equipment operators and truckers hired by Compliance are likely to require occupation-specific training and certification.

- Qualifications for the staff positions require professional certification (e.g. trades tickets for maintenance supervisors, engineering, etc), management training, high level computer proficiency and between 3 and 7 years experience in a comparable position and mine environment.
- Labourer positions require a high school level education. The job ads surveyed for this report require between 2 and 5 years experience in a comparable mine environment and position.
- Few women in the Comox Valley could expect to work at the mine. Among

primary industries in Canada, mining has the lowest participation of women. In 2010 women were 14.4 per cent of the mining and exploration workforce. Most of the jobs held by women in this sector were administrative and culinary (Women in Mining Canada 2010).

CURRENT JOB AD

Underground Support Workers , Tumbler Ridge B.C.

REQUIREMENTS:

- completion of secondary school
- three or more years related experience in underground coal mine support occupation preferred
- demonstration of previous formal training in support of specific occupation.

(HD Mining, Career Opportunities, "Underground Coal Mine Support Workers". Oct 2012)

4. Availability of experienced workers in Canada and the Comox Valley

"While we are very good at large, open pit mines, we are not very good at underground coal mines..... It is a very dangerous job, and it is not one that it is easy to recruit people for."

(Pat Bell, B.C. Minister of Jobs, Tourism and Skills Training, quoted in Huffington Post 2012).

There are a small number of hourly workers employed in the coal industry in Canada. Their numbers dropped slightly in the 2000s from 2,991 employed in January 2001 to 2,540 employed in January 2008 (the last available data). The numbers of salaried workers in coal mines in Canada increased in the mid-2000s from 2,037 in January 2006 to 3,496 in January 2008 (Statistics Canada 2011). In B.C. in 2008 there was a workforce of 16,450 in all mines and quarries in the province (MIHRC 2011).

The BC Mining Industry Human Resources Council predicts a 35% increase in jobs by 2017 and anticipates an unprecedented labour shortage due to an aging workforce and expansion of all types of mining. In particular it predicts shortages among heavy equipment operators, mechanics, support workers, supervisors and labourers (MIHRC 2008). This is reflected across the country: in April 2011 the industry forecast that there would be over 610 mining job vacancies across the country in 2012, and over 1800 by 2020 (MIHRC 2011).

- The small numbers of underground coal miners in Canada and the current labour shortage in the industry means that it is highly unlikely that there are qualified and available workers already resident in the Comox Valley.

- The requirement of previous experience in a comparable mine environment for both hourly and staff positions is key for underground mine safety, but it significantly limits the numbers of local workers who could be hired by Compliance Coal. Local forestry workers may qualify for trucking positions. Heavy equipment operators and certified trades, maintenance and administrative workers may qualify for some positions. However, those people most likely to be hired are those most likely already employed, which could create upward pressure on salaries in other industries in the area.
- Workers who do not have a high school diploma are those most in need of jobs, but are not likely to be eligible for any of the mine jobs. The last census reported that 12.8% of adults between the ages of 25 and 64 in the Comox Valley had not completed high school (Census 2006). The North Island College program is a four month program and does not provide upgrading to a high school diploma level.

Jobs at the Raven mine are likely to be filled by groups of workers from other provinces and countries.

- The least permanent of these could be temporary foreign workers. Canada's Temporary Foreign Worker Program allows employers to hire workers from other countries for specific jobs, but restricts those workers from finding other work while they are in the country, and from applying for citizenship. This group of workers has the same employment rights as other workers, but their status makes it very difficult for them to access these protections, which is among other things, a significant safety concern. It also means that they are not able to significantly invest themselves in the local community: they are likely to be paid a lower wage, their wages often include significant deductions for recruitment fees, transportation and accommodation, and the majority of the rest of their earnings are likely to be sent home (Alberta Federation of Labour 2007).
- **A significant proportion of the Raven mine wages and salaries is not likely to stay in the Comox Valley**, regardless of whether Compliance uses temporary foreign workers. Workers could settle within commuting distance of the mine in communities between Nanaimo, Port Alberni and Campbell River. Their housing and other needs will create increased pressure on tourist accommodations, rental housing markets, health care, social services, education, recreation and other services. Their contribution to municipal taxes and levies are not likely to be enough to offset the costs in any one community in the mid-Island.

Other mining communities experience similar effects – for the most part any wealth created by coal mining does not stay in local communities, but filters to larger centers. The most thoroughly documented of these are communities in the United States (Fry Konty 2009, McIlmoil 2010). There is nothing in Compliance's proposals to date that suggests any measures to mitigate this effect.

Chinese Underground Coal Miners in Northern B.C.

Canadian Dehua International has recently demonstrated that they could not find adequately skilled workers in Canada for their new underground coal mine at Murray River near Tumbler Ridge, B.C.. The company ran job ads in Canada and did not find experienced workers at the pay range advertised. It then applied for, and received, government permission to hire 201 temporary foreign workers from China. Four mines are in development in the same area, and there are projections that the company could be planning to import as many as 2000 Chinese workers.

There are several concerns for these workers, and for the Canadian labour market. Vancouver Island mining communities know the history of inequality associated with Chinese and Japanese mine workers in the previous century. The contemporary story is developing as follows. Dehua workers reportedly will pay a \$12,500 recruitment fee, which is two and a half times the average yearly salary for mine workers in China. They may be caught in the middle of an agreement between the recruitment company and the employer about how much they will be paid: Dehua states that the wages will be upwards from \$28/hour, while the Chinese recruiter indicates that it will be \$22 - 25/hour. The recent disaster record in Chinese coal mines is very high, and there is considerable concern that the company will be importing a less than "safety first" culture. Not the least of the safety concerns is about communications: the Dehua Chinese workers are required to know 100 English words related to workplace safety, but they are not eligible for English language programs once they are here. This group of workers has been promised a chance to immigrate to Canada, and to bring their families, although this is proving very difficult for other workers in this program. They will live in dormitories near the mine. The Chinese miners will begin working in northern B.C. in November 2012 (O'Neil,2012; Nuttall 2012, Young 2012).

5. What do we know about the quality of these jobs?

Good jobs are not simply ones that are well paid. Good jobs take place in a healthy and safe environment and have reasonable and predictable hours. They are not overly stressful and are located close to workers' homes. They provide stability for workers and their households, and make it possible for workers to contribute to their workplace and community. It does not appear that the Raven jobs will be high quality jobs. Many jobs may be temporary, and they will take place in a very dangerous workplace environment.

Mining, quarrying and oil wells are the most dangerous workplaces in the country (Centre for Study of Living Standards 2006). In relation to other types of metal mines, underground coal mines are particularly dangerous because the process liberates methane and coal dust easily catches fire. While the government has recently stated that mining is one of the safest industries in the province, its report has very little data about

underground coal mining because so little of it has taken place in the province over the last two decades (Government of B.C. 2012).

Safety measures are an important component of the cost of contemporary mines and there have certainly been innovations since the early 1900s (there is a considerable industry in providing safety measures and training). Strong and vigilant unions that focus on health and safety are significant contributors to safer mines. But there is no magic bullet, regulatory system or “new” technology that will make the Raven mine anything other than one of the most dangerous worksites in the country.

Compliance Energy is not required to address health considerations for workers and for surrounding communities in its forthcoming Environmental Assessment. There are, however, a number of crucial health and safety issues for its workers.

- In the previous decade U.S. underground coal workers had the highest incidence of non-fatal injuries among all miners (Esterhuizen 2006).
- There is not a standard skills and safety certification in B.C. or Canada for underground miners. The Mining Industry Human Resources Council has developed a National Occupational Standard for Underground Miners, but it has not been adopted throughout the industry (MIHRC 2010).
- Because of exposure to excessive amounts of respirable crystalline silica, rates of “miner’s lung disease” in the U.S. have been increasing since the early 2000s (Laney 2009).
- Processing plant and transportation workers, as well as residents in surrounding communities are vulnerable to increased rates of lung cancer (Hendryx 2007).
- One study found two factors to be central contributors to underground coal mining accidents: mine standards that do not reflect conditions in previously mined geographic areas such as the Comox Valley; and the retreat pillar mining process which is being proposed for the Raven mine (McAteer 2001).
- The central lesson from the explosion at the Westray mine in Nova Scotia and the death of 26 miners in 1992 was that lax government enforcement of regulations and inattentive or inexperienced management created the conditions for a fairly robust health and safety system to fail (Richard 1997). The combination of Compliance Energy’s inexperience with an underground mine and the inadequacy of B.C.’s funding for mine inspectors is a serious concern.
- There is concern that a combination of foreign ownership and the use of foreign temporary workers will in effect cause the import of reduced safety practices (Huffington Post 2012).

6. Will 400 - 500 so-called spin-off jobs be in the Comox Valley?

Compliance Energy states that the Raven project will generate 400 - 500 indirect jobs and about \$37 million/year in spin off benefits for goods and services (Compliance 2012).

There are several ways that the project's spending could create jobs beyond those of the mine's employees. Only a small proportion of this type of spending is likely to take place in the Comox Valley, or on Vancouver Island.

- i) **Capitol Spending.** A significant proportion of spin-off jobs from the mine will be associated with the proposed capital spending outlined in the *Technical Report* (Pincock 2011). These would be mining equipment manufacturing jobs in companies that manufacture roof bolters, continuous miners, shuttle cars, safety systems, conveyors, trucks, scoops, rock dusters, road graders, etc. Mine equipment manufacturers are not located in the Comox Valley or on Vancouver Island - they are located all over the world, the closest being in southern BC, Alberta and eastern Canada. (Coal Association of Canada 2012).
- ii) **Workers' Wages.** There is no question that workers wages will create some economic activity throughout the mid-Island. Workers will need to purchase local goods and services - housing, food, alcohol, entertainment, recreation, etc.. As we discussed above, however, the proportion of salaries that workers might spend locally will depend on the extent to which the company hires workers into permanent positions and whether workers will move temporarily or permanently from other provinces or countries.
- iii) **Taxation.** Some of the economic activity associated with mine workers would be seen in public services, and would not be paid for directly by salaries. The mine's workforce would create increased activity in publicly funded health care, emergency services, policing, education, transportation, etc. It is not at all certain that workers' personal income tax or Compliance's corporate taxes would cover these costs. There have been no promises from the provincial government that it would allocate extra jobs to local service providers to handle the increased demand.
- iv) **Profit.** Owners and shareholders who may profit from the mine are from all over the world. There is no mechanism for their spending to be re-directed to the Comox Valley.
- v) **Real Economic Multipliers.** As Kuyek has pointed out, the real economic multipliers that motivate new economic growth in a local community are volunteer effort, dedicated workers, and a commitment to grow the local economy. The Comox Valley already has these in abundance (Kuyek 2012).

APPENDIX

Table 3: Raven Proposed Jobs: proposed numbers, wages and salaries elsewhere and experience required

RAVEN PROPOSED JOBS: UNDERGROUND	TOTAL: 200	WAGES ELSEWHERE	EXPERIENCE REQUIRED
Continuous mine operators	20	<ul style="list-style-type: none"> o \$69,638/year (Quinsam) o \$38,000 – 48,800 / year (various job sites) 	<ul style="list-style-type: none"> o 12 months – 2 years experience; o miners license or State certification in US
Roof bolter operators	40	<ul style="list-style-type: none"> o \$30,000 – 50,000/year (various job sites) 	<ul style="list-style-type: none"> o 2 years
Shuttle car operators	36	<ul style="list-style-type: none"> o \$44,000 – 50,000/year (various job sites) 	<ul style="list-style-type: none"> o 2+ years
Hoist operators	4	<ul style="list-style-type: none"> o \$45,600 – 71,600 (various job sites) 	<ul style="list-style-type: none"> o completed apprenticeship, Red ticket in B.C.
Maintenance tradespersons	28	<ul style="list-style-type: none"> o \$70,304 - 70,928 (CostMine) o \$65,457/year for journeyman (Quinsam) o \$52,000 – 66,560 (various job sites) 	<ul style="list-style-type: none"> o construction millwright, first aid, machinist, underground electrician, hoisting and rigging certification
Continuous mine helpers	12	<ul style="list-style-type: none"> o 37,000/year (various job sites) 	<ul style="list-style-type: none"> o Completion of secondary school o 1 -2 years related experience
Utility persons	12	<ul style="list-style-type: none"> o \$56,160 – 70,350 (HD Mining) o \$44,000/year (various job sites) 	<ul style="list-style-type: none"> o Completion of secondary school o Minimum 3 years related experience with underground coal mining o Trade certification, Previous formal training
Maintenance helpers	16	<ul style="list-style-type: none"> o apprenticeship rates 	
Labourers	28	<ul style="list-style-type: none"> o \$52,936 (CostMine) o \$48,651/year (Quinsam) o \$31,300 – 52,000 (various job sites) 	<ul style="list-style-type: none"> o Completion of secondary school o Minimum 3 years related experience with underground coal mining o Trade certification, Previous formal training. o Possibly Mine Safety Certificate, Heavy Equipment Operator Certificate
Team Leaders	4	<ul style="list-style-type: none"> o \$63,730/year (Quinsam) 	
RAVEN PROPOSED JOBS: COAL PLANT	TOTAL: 25	WAGES ELSEWHERE	EXPERIENCE REQUIRED
Plant Operators	4	<ul style="list-style-type: none"> o 59,57/year – 56,222/year (Quinsam) 	
Maintenance	8	<ul style="list-style-type: none"> o 65,936/year for 	<ul style="list-style-type: none"> o Certification as: construction

tradespersons		<ul style="list-style-type: none"> ○ journeyman (Quinsam) ○ 52,000 – 75,940 (various job sites) 	<ul style="list-style-type: none"> ○ millwright, first aid, machinist, underground electrician, hoisting and rigging, heavy duty equipment technician
Lab Technicians	4	<ul style="list-style-type: none"> ○ 50,000 – 70,000 (various job sites) 	<ul style="list-style-type: none"> ○ college or university degree
Stockpile heavy equipment operators	5	<ul style="list-style-type: none"> ○ 59,571/year (Quinsam) ○ 39,378/year – 66,352/year (various job sites) 	<ul style="list-style-type: none"> ○ high school; 1 year on-site training; 5 years industry experience; excellent safety record; 1A drivers license
Labourers	4	<ul style="list-style-type: none"> ○ \$52,936 (Costmine) ○ 48,651/year (Quinsam) ○ 31,000 – 52,000 (various job sites) 	<ul style="list-style-type: none"> ○ Completion of secondary school ○ 1 -2 years related experience
RAVEN PROPOSED JOBS: SALARIED POSITIONS	TOTAL: 45	SALARIES ELSEWHERE	EXPERIENCE REQUIRED
Mine Manager	1	<ul style="list-style-type: none"> ○ 113,140 – 150,000 (various job sites) 	<ul style="list-style-type: none"> ○ engineering or science degree ○ 5 years underground management experience ○ BC mine manager certification
Production Superintendent	1	<ul style="list-style-type: none"> ○ 60,000 – 64,300 (various job sites) 	<ul style="list-style-type: none"> ○
Maintenance superintendent	1	<ul style="list-style-type: none"> ○ 55,300 – 100,000 + (various job sites) 	<ul style="list-style-type: none"> ○ trade qualification, heavy duty mechanic background ○ 5 - 7 years experience planning and scheduling ○ computerized maintenance management experience ○
Safety / Administration Manager	1	<ul style="list-style-type: none"> ○ 60,000 – 84,000/year (various job sites) 	<ul style="list-style-type: none"> ○ 3 years experience underground, ○ BC underground mine rescue certification ○ 8 – 10 years occupational health & safety experience in coal mining
Coal Preparation Plant Manager	1	<ul style="list-style-type: none"> ○ 110,000 – 130,000 (various job sites) 	
Coal Quality Supervisor	1	<ul style="list-style-type: none"> ○ 56,000 – 90,000/year (various job sites) 	
Mine production supervisors	6	<ul style="list-style-type: none"> ○ \$90,000 – 120,000/year (HD mining) ○ \$48,800 – 90,000 (various job sites) 	<ul style="list-style-type: none"> ○ 3 years experience as a Foreman in an underground coal mine Current Underground Coal Mine Foreman Certification ○ mining engineering degree
Maintenance supervisors	4	<ul style="list-style-type: none"> ○ 54,000 – 95,000 (various job sites) 	<ul style="list-style-type: none"> ○ university degree
Coal preparation plant supervisors	4	<ul style="list-style-type: none"> ○ 53,300 – 90,000 (various job sites) 	

Surface operation supervisors	4	o 50,000 – 60,000 (various job sites)	
Technicians (Environment, Engineering, Geological, Survey)	4	o 50,00 – 55,000 (various job sites)	o technical diploma or university degree o min. 2 years experience
Safety/training staff	4	o 48,00 – 84,000 (various job sites)	
Administrative/ Clerical	13	o 38,120 – 57,000 (various job sites)	
RAVEN PROPOSED JOBS: SECURITY	TOTAL: 8	WAGES ELSEWHERE	EXPERIENCE REQUIRED
Contracted security	8	o 48,651/year (Quinsam) o 27,550 – 35,000/year (various job sites)	
RAVEN PROPOSED JOBS: PORT OPERATIONS	TOTAL: 21	WAGES and SALARIES ELSEWHERE	EXPERIENCE REQUIRED
Long Shoremen	2	o 64,480 – 77,000 / year (various job sites)	
Maintenance tradespersons	6	o 65,457/year for journeyman (Quinsam) o 52,000 – 66,560 (various job sites)	o construction millwright, first aid, machinist, underground electrician, hoisting and rigging certification
Truck Facility Operators	4	o 59,571/year (Quinsam) o 39,378/year – 66,352/year (various job sites)	o high school; 1 year on-site training; 5 years industry experience; excellent safety record; 1A drivers license
Coal handling & storage (heavy equipment operators)	8	o 59,571/year (Quinsam) o 39,378/year – 66,352/year (various job sites)	o high school; 1 year on-site training; 5 years industry experience; excellent safety record; 1A drivers license
Manager	1	o 110,000 – 130,000 (various job sites)	
RAVEN PROPOSED JOBS: TRANSPORTATION	TOTAL: 50	WAGES ELSEWHERE	EXPERIENCE REQUIRED
Truck Drivers/Front End Loader Operators	44	o \$63,232 (CostMine) o 56,200 / year (Quinsam) o 40,000 – 45,000 /year (various job sites)	
Maintenance Tradesmen	3	o 65,457/year for journeyman (Quinsam) o 52,000 – 66,560 (various job sites)	o automotive mechanic, hoisting and rigging certification
Supervisors	2	o 50,000 – 60,000 (various job sites)	
Labourer	1	o 48,651/year (Quinsam) o 31,000 – 52,000 (various job sites)	

Sources

- Alberta Federation of Labour, 2007. *Temporary Foreign Workers - Alberta's Disposable Workforce. The Six-Month Report of the AFL's Temporary Foreign Worker Advocate*. Edmonton.
- Amos, Greg, 2012. "HD gets bulk sample permit, seeks more workers". *The Ridge Sentinel*, March 23, 2012.
- Bradley, C. and Sharpe, A., 2009. *A Detailed Analysis Of The Productivity Performance Of Mining In Canada*, Centre for the Study of Living Standards, Ottawa.
- Center for the Study of Living Standards, 2006. *Five Deaths a Day: Workplace Fatalities in Canada, 1993-2005*. Research Paper 2006-04, Ottawa.
- Coal Association of Canada, 2012. "Current Members". Accessed at: <http://www.coal.ca/membership/current-members/>.
- Compliance Energy
2011. "Compliance Energy Corporation - Positive Feasibility Results Received For The Raven Coal Project", May. Accessed October 14, 2012 at: http://www.complianceenergy.com/all_news/110509_CEC_Press_Release.pdf
2012. "Top 10 things to know about the Raven Underground Coal Project". April. Accessed October 11, 2012 at http://www.theravenproject.ca/cms/wp-content/uploads/2012/06/top_ten_things_you_need_to_know_about_Raven.pdf.
- CostMine, 2012. *2012 Survey Results of Canadian Mine Salaries, Wages and Benefits*. As reported in J. Caldwell, *I Think Mining*. Accessed October 11, 2012 at <http://ithinkmining.com/2012/06/27/2012-survey-of-canadian-mine-wages/>.
- Esterhuizen, G.S., Grtunca, R.G., 2006. "Coal mine safety achievements in the USA and the contribution of NIOSH Research", *The Journal of The Southern African Institute of Mining and Metallurgy*, Vol. 106, December.
- Fry Konty, M and Bailey, 2009. *Impact of Coal on the Kentucky State Budget*, Mountain Association for Community Economic Development.
- Government of B.C., 2012. "Mining remains one of B.C.'s safest industries". Ministry of Mines and Energy.
- Graham Brazier, 2012. *Island Tides*, February 9. Accessed at: http://www.islandtides.com/assets/reprint/mining_20120209.pdf.
- HD Mining
2011. *Seven approvals for foreign workers*. Accessed Nov 8, 2011 at <http://hdminingintl.com/NewsDetail.asp?id+8>.
2012. *Career Opportunities*, Underground Coal Mine Support Workers. Accessed October 5, 2012 at <http://hdminingintl.com/CareerDetail.asp?id=25>.
- Hendryx, M, O'Donnell and Horn, 2007. "Lung cancer mortality is elevated in coal-mining areas of Appalachia". *Lung Cancer*, Vol 62, Issue 1, pg 1 – 7, October.
- Huffington Post, 2012. "Plan To Bring Foreign Workers To B.C. Mines Irks Union". October 11, 2012.
- Joy, G, Beck, Listak, 2010. *Respirable quartz hazard associated with coal mine roof bolter dust*. National Institute on Occupational Safety and Health, Pittsburgh.

- Laney, A S., Petsonk, E., Attfield, M., 2010. “Pneumoconiosis among underground bituminous coal miners in the United States: is silicosis becoming more frequent?” *Journal of Environmental Medicine*; Volume 67; Issue 10: pgs 652-656.
- Line Creek Operations (Teck Coal) And The International Union Of Operating Engineers Local 115, 2009. *Collective Agreement, 1 June 2009 To 31 May 2014*.
- McAteer, D., 2001. *Report to Governor Bob Wise on Mine Safety and Health in West Virginia*.
- McIlmoil, R., Hansen, and Boettner,
2010. *The Impact of Coal on the Tennessee State Budget, Downstream Strategies*, Morgantown WV.
2010. *The Impact of Coal on the West Virginia State Budget, Downstream Strategies*, Morgantown WV.
- Mining Industry Human Resources Council,
2008 . *Report on the Labour Market Demand Projections, Presented to the B.C. Mineral Exploration and Mining Industry Labour Market Task Force*, June, Ottawa.
2010. *National Occupational Standard: Underground Miner*.
- Nuttall, J., 2012. “Recruiters Charging BC-Bound Chinese Temp Miners \$12,500”, *The Tyee*, October 18, 2012.
- O’Neil, Peter, 2012. “Chinese nationals brought in to fill B.C. coal miner shortage”, *Vancouver Sun*, October 10, 2012.
- Pincock, Allen & Holt, 2011. *Technical Report on the Raven Underground Coal Project*, June 8, 2011.
- Quinsam, B.C. Coal Corp and United Steelworkers 9347, 2010. *Collective Agreement May 1, 2010 – April 30, 2013*.
- Statistics Canada, 2011. *Table 281-0023 - Employment (SEPH), unadjusted for seasonal variation, by type of employee for selected industries classified using the North American Industry Classification System (NAICS), monthly (persons)*, CANSIM (database). Government of Canada, Ottawa.
- Teck Coal Limited Fording River Operations and United Steelworkers Local 7884, 2011. *Collective Agreement, April 28, 2011*.
- Richard, Justice P., Commissioner, 1997. *The Westray Story, A Predictable Path to Disaster, Report of the Westray Mine Public Inquiry*, Government of Nova Scotia.
- Women in Mining Canada, 2010. *Ramp-Up: A Study on the Status of Women in the Mining and Exploration Sector*.
- Young, Ian. 2012. “Chinese miners face frosty reception in northern Canada”, *South China Morning Post*, October 19, 2012.

Job and Salary Search Sites

- Canadian Dehua Underground Mines (Tumbler Ridge, BC). “Recruitment”. Accessed at: <http://www.dehua.ca/recruitment.asp/> .
- Government of Canada. “Job Bank Canada”. Accessed at: <http://www.jobbank.gc.ca/Intro-eng.aspx/> .

HD Mining. “Opportunities” Accessed at:
<http://www.hdminingintl.com/Opportunities.asp>.

Infomine.com. “Job Fair”. Accessed at <http://www.infomine.com/careers/jobFair/> .

Insidejobs.com. Accessed at: <http://www.insidejobs.com/>.

Mining Association of B.C. “Job Board” Accessed at: <http://www.mining.bc.ca/job-board/> .

Mining Industry Human Resource Council. “Look at what you can earn”. Accessed at http://www.acareerinmining.ca/en/resourcesGeneral/MIHR_Ratecard_Ev4.pdf .

Mining Jobs 4 Mining People. Accessed at: <http://www.jobs4mining.com/index.php/> .

Mymajor.com. Accessed at: <http://www.mymajors.com/> .

O*net. “Summary for Roof Bolters, Mining”. Accessed at:
<http://www.onetonline.org/link/summary/47-5061.00/> .

Red Seal Recruiting. Accessed at: <http://www.redsealrecruiting.com/> .

Salary.com. Accessed at <http://www.salary.com/mysalary.asp/> .

Teck (open pit coal mines Southeast B.C.). “Careers”. Accessed at:
<http://www.teck.com/Generic.aspx?PAGE=Teck%20Site/Careers&portalName=tc/>

Wowjobs.ca. Accessed at <http://www.wowjobs.ca/> .

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