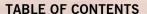




# Mining Industry in British Columbia and Yukon

with a special report on

# Vancouver: A Center for Exploration Excellence



### From Sea to Sea

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The reemergence of a mining giant

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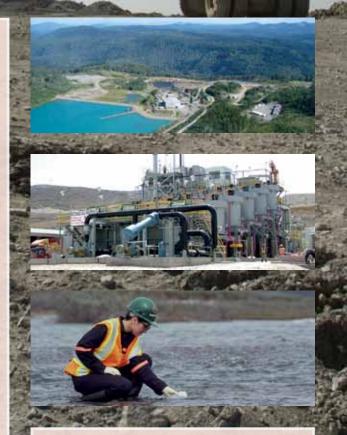
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Photos on this page with courtesy of:

Hunter Dickinson Inc (main), Barkerville Gold Mines (top), Merit Consultants (middle) and Teck Resources Limited (bottom)



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# From Sea to Sea

### A brief introduction to Canada

It is commonly accepted that the name 'Canada' derives from Laurentian, a Native American language from the Iroquoian family of languages, spoken in parts of what is now Quebec and Ontario. Jaques Cartier, a Brittany-born explorer sent to Canada in 1534 by King Francois I of France, mistook the Laurentian word 'kana-ta', meaning 'settlement', as the local name for the region. It is easy to see how the Latinized form of this word led to the modern name of 'Canada'. Incidentally, the purpose of his first voyage was to 'discover certain islands and lands where it is said that a great quantity of gold and other precious things are to be found'.

Alternative theories regarding the etymology of Canada's name, however, do exist. In 1698, the similarity of the name to the Spanish 'aca nada' (or the Portuguese 'cá nada'), meaning 'here, nothing', led a Franciscan missionary most famous for bringing Niagara Falls to the attention of Europe to suggest that Canada was originally a sarcastic and derisive name. Spanish explorers, explained Father Louis Hennepin, had explored Canada, found no gold or other 'precious things', and assumed that the country was barren. If this is the true etymology, then today's Canadians are having the last laugh.

In our last report on the Canadian mining industry, published in September 2006, we wrote about a country enjoying a ninth consecutive year of budget surplus and a very healthy 2.9% GDP growth. The global mining industry was booming, benefiting from a surge in commodity prices so significant that it had doubled the S&P GSCI (formerly the Goldman Sacks Commodity Index) between 2000 and 2007. Copper and silver prices reached record highs in 2006, gold was approaching its 1980s peak, and a range of other minerals, including platinum, uranium and potash, had all enjoyed a few years of consecutively rising prices. Worldwide, non-ferrous exploration expenditure in 2006 reached US\$7.5 billion according to the Metals Economics Group, comfortably surpassing the previous 1997 peak and following four consecutive years of growth.

In Canada, the sector had accounted for a relatively steady 4% of total GDP for the past two decades; a figure which did not factor in imports of ores, ore concentrates and recyclables and their subsequent processing. Canada accounted for 19% of



the world's exploration budget, leading Jon Baird, managing director of CAMESE (Canadian Association of Mining Equipment and Services for Export) to tell this publication that 'Canada is the world's miner'. The total value of Canada's mineral production in 2006 was over C\$34 billion.

Since our report in September 2006, the world has suffered what was widely considered to be the worst economic crisis since the Great Depression of 1929. Almost exactly two years after our report was published, Lehman Brothers filed for bankruptcy protection, the first major casualty (or cause) of fundamental market weaknesses that led to recession. The mining industry, as readers of this publication will well know, bore a disproportionate amount of the pain. Global non-ferrous exploration budgets, as estimated by the Metals Economics Group, suffered their steepest decline in over two decades, falling by more than US\$5 billion between 2008 and 2009. In Canada, the total value of mineral production fell by over US\$16 billion in the same year.

Our return to Canada, however, is not to document the industry's trials but its resurgence. Worldwide, global non-ferrous exploration budgets rose to US\$11.2 billion in 2010, only slightly below its 2008 high of US\$12.6 billion. In Canada, this exploration budget had fallen by over 50%. However, although the country's mineral wealth and technical expertise may not have saved its mining sector from the economic crisis, it did enable it, phoenix-like, to regain its leading position as mineral demand from emerging economies revived the global industry. As the American economy still struggles with the aftershocks of recession

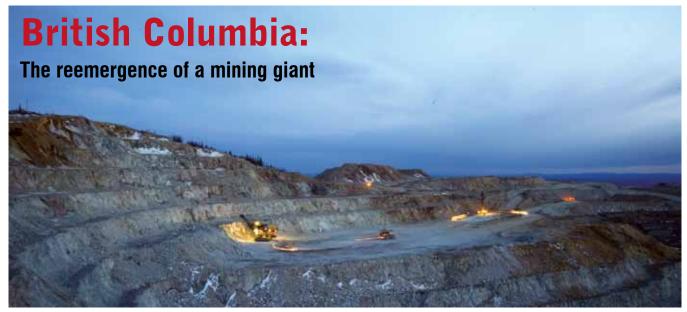
and Europe attempts to prevent yet more countries defaulting on loans, Engineering and Mining Journal and Global Business Reports return to a country in which the sheer scale and diversity of mining activities mean that we can no longer attempt to cover it in a single editorial.

This special report on the mineral sector in British Columbia and Yukon, with a special focus on Vancouver's role as an international center of exploration excellence, will form the starting point for a series of reports that will explore the opportunities and challenges present in Canada as it rebounds from recession.

British Columbia and Yukon, despite a multitude of differences in everything from their political structure to their geographic and geologic trends, both exemplify the aspects that make the Canadian industry so exciting. Yukon, with a land area over three and a half times the size of England and a population of a mere 34.246, is an unrivalled expanse of emptiness. However, the discovery of vast quantities of gold in the past few years, arguably sparked by the work of prospector Shawn Ryan, has had geologists and prospectors rushing to the region. Subsequently, the territory is now perceived as one of the most promising exploration prospects in the world.

British Columbia meanwhile has an astonishing diversity of natural wealth, producing antimony, cadmium, copper, gold, iron ore, lead, molybdenum, silver, zinc, thermal and metallurgical coal and 30 industrial minerals. Having been the site and subject of numerous gold rushes in the 19th century, it has since been through the peaks and troughs so common to the industry and is now reemerging as one of the world's preeminent jurisdictions for conducting exploration and mining activities.

Finally, this report will contain a special feature on Vancouver, the undisputed exploration capital of the world. The city, with its glass skyscrapers and café culture, looks far removed from the on-the-ground (or under-the-ground) realities of mineral exploration. Yet those skyscrapers house in excess of 1200 junior companies, more than any other location in the world. Vancouver based exploration companies, with a typical Canadian reputation for technical expertise and best practice, are discovering deposits everywhere from Mongolia to Guyana.



Taseko Mines' 75% owned Gibraltar copper-molybdenum mine, located 65 km north of Williams Lake, British Columbia.

# The importance of the mining industry in British Columbia

The motto of British Columbia, Splendor sine Occasu (Splendor without Diminishment), captures the defining feature of the province; its pristine and beautiful natural wilderness. This nature provides more than simply pretty pictures for tourists and untouched mountains for skiing. Natural resources form the foundation of British Columbia's economy and have done since its earliest habitation.

Three industries reign supreme in the natural resources sector. Oil and gas, a relative newcomer to the province, now produces approximately C\$7 billion of petroleum products per year, representing roughly 4% of British Columbia's total GDP. Since the first well was drilled off Western Graham Island in 1913, British Columbia has grown into Canada's second largest producer of natural gas, accounting for 15% of total national production. The forests, which cover over 60% of the British Columbia's land area, support a forestry industry that has traditionally been the backbone of the province's economy. Along with the fish industry, this abundant natural resource supported the most densely populated areas, and most complex societies, of indigenous peoples in pre-colonial North America.

The forestry industry, which contributed 7.4% to British Columbia's GDP in 2006, has since suffered several setbacks. The deflated housing bubble in the United States has lessened demand for timber in British Columbia's main export market. The ongoing and often quite bitter softwood lumber dispute between Canada and the United States has made even this limited demand

harder to reach. The destruction caused by the mountain pine beetle (Dendroctonus ponderosae) infestation has cleared vast swathes of forest. All of this has opened the way for an increasing importance to be placed on the third industrial pillar, the mining industry.

# The history of the mining industry in British Columbia

Despite the initial impressions of the first Spanish explorers, it was not long after the first Europeans arrived in British Columbia that the first signs of British Columbia's vast mineral wealth were noticed. In 1793, a mere 19 years after José María Narváez first sighted the Burrard Peninsula, coal was discovered in the Peace River area. The first gold discovered in the province was around 1850. The native people from the Haida tribe brought gold ore to Richard Blanshard, the then governor of Vancouver Island, thus reportedly starting the first



Historic hard rock mining of the Cariboo gold project. There were seven past producing hard rock mines on Barkerville Gold's Cariboo gold property.

(relatively small) gold rush on the Queen Charlotte Islands, off the North Coast of British Columbia.

Since these first finds. British Columbia has been home to a steady flow of discoveries. A series of gold rushes characterized the 19th century, starting with the Fraser Gold Rush in 1856, ending with the Atlin Gold Rush of 1898 and including in-between the Cariboo Gold Rush of 1861. The 1920s saw the Britannia Mine become the largest copper mine in the British Empire. In the early 1960s, with open-pit production methods becoming increasingly feasible, copper began to play a dominant role in the province's industry. Several huge copper mines opened, including Highland Valley Copper, the largest open-pit copper mine in Canada. Copper remains the second most important mineral produced in the province, contributing 21.81% of its total mineral production value in 2010.

Over the past couple of decades, the British Columbian mining industry has experienced both the highs and lows so common to the sector. When the New Democratic Party took power in 1991 and subsequently held on to it for nine and a half years, the total value of metal production from the province fell by over C\$300 million. Admittedly, the 1990s did see a general fall across commodity prices globally, however it is telling that in the ten years before the NDP came to power, the value of mineral production in British Columbia rose by \$600 million in a decade of similarly stagnant commodity prices. Even more tellingly, exploration spending took an immediate fall after the election of Michael Harcourt, the NDP leader succeeded by Glen Clark, from

an outstanding peak of 30% of Canada's total, eventually reaching a low of just 6% in 2001 when the NDP left.

### The resurgence of the mining industry in British Columbia

The British Columbia Liberal Party, returning to power for the first time since 1952, introduced a 20% Mining Flow-Through Share Tax Credit program within two months of winning the election. This program has now been extended to 2013, having been due to end on the last day of 2010. Further tax incentives and streamlining of bureaucratic procedures resulted in an impressive and almost immediate reversal of the last decades negative trends. By 2005, three new mines had opened and two old mines had reopened. No mines had been shut down. Today, British Columbia is home to 20 operating mines (excluding industrial mineral mines and plants), up from a mere 12 at the end of 2001. Consequently, the value of mineral production has increased by just short of C\$4.5 billion from its 2001 total to its 2010 figure of C\$7.073.759 million.

The primary driving force behind this transformation has been the efforts of the government, keen to further increase British Columbia's status as a mining-friendly jurisdiction after the province returned to the top



Russell Hallbauer, president, CEO and director, Taseko Mines

half of the Fraser Institute's rankings of the world's most attractive jurisdictions for mineral exploration and development in March this year. A recent change to the permitting process is one example of the government's initiatives, as explained by the Honorable Randy Hawes, former Minister of State for Mining and current Parliamentary Secretary for Natural Resource Operation Review. "Previously, we have had a regulatory regime that required companies wanting to carry out exploration or mining activities to go through a multi-stage permitting process involving several different ministries.

The idea of the recent changes has been to bring all of the permitting process together in one ministry called the Natural Resource Operations Ministry. By doing this we can really streamline the process. We can preserve all of the safeguards that are required but eliminate needless duplications and different consultations."

Although the effectiveness of these changes is doubted by some, others are more optimistic. "The current provincial government sees resource development in a far more positive light than the former New Democratic Party, which is in part a reflection of the profile that the industry has taken in the economic development of countries, provinces and states around the world." says Russell Hallbauer of Taseko Mines.

An examination of Taseko Mines' proposed Prosperity mine shows a project with the potential to generate more than C\$5 billion in revenue for the provincial and federal governments, spawn over C\$7 billion in spin-off consumer spending and create more than 2000 direct and indirect jobs. With a total of 36 new mines permitted in the permitting process or in the environmental assessment process, the industry is positioned to contribute much more to the economic development of British Columbia.





Unfortunately, although Prosperity gained approval from the Provincial Government, it has been stalled at the Federal level. The tale of Prosperity illustrates the key legal impediment to growth in the Province: the dual, Provincial and Federal, permitting system. While the federal government retains jurisdiction over issues such as fisheries and has the right to block any mining project in the Province, the path from drawing board to construction will never be smooth, some argue. "In BC we have a duplicate project approval system where you have Federal and Provincial processes that do not always coincide," said Brian E. Abraham QC, partner at Fraser Milner Casgrain LLP and co-chair of the company's mining group. Abraham is well positioned to comment, being qualified to practice law in both BC and Yukon. "Permitting is quite straight forward at the exploration stage. It is only at the advanced stages of projects, when you are talking about extensive programs to try and better define a resource, then it becomes a problem. If you want to put a mine in production, it is extremely expensive to permit it. A lot of the work that has to be done is hard to justify even from the environmental perspective."

"There is nothing wrong with the British Columbian system. In fact, it's probably more thorough than the federal government system," said Abraham. "The federal government should devolve some of their responsibilities, e.g. fisheries, and environmental, to the provincial government. There is not a constitutional barrier to devolution. If you can devolve decision making authority in Yukon, you can in BC. I think the federal government has to agree on a devolution of the process otherwise duplication will continue."

### The key players in the mining industry in British Columbia

"British Columbia is currently the engine room of Western Coal's growth," said Keith Calder, former president and CEO of Western Coal (and current CEO of Walter Energy). One of the foremost metallurgical coal producers in the world, Western Coal recently merged with the US-based Walter Energy to create the largest publicly traded pure metallurgical coal player in the world. This merger, which sees Western Coal's Canadian and European assets operating as part of Walter Energy's Canadian/European division, gives the new Walter Energy an enviable position in the world's coal market. Despite having operations in Wales and the United States, a small section of northeast British Columbia will continue to be a driving force behind the former Western Coal's assets. "During the 2010 fiscal year we produced 2.1 million metric tons (mt) of coal in northeast British Columbia. We will do four million mt this year, five million mt next year and six million mt the year after that, which is a huge growth profile for a high quality coal producer," said Calder.

The importance placed on British Columbia by Western Coal is indicative of the ability of the province to support major mining operations. Although Vancouver is known for its juniors, a substantial number of majors still operate in and out of British Columbia. An atypically high number of these majors show a preference for operating within their home province. Western Coal, shortly before their acquisition, picked up more than 50,000 hectares of exploration property between their Rural mine and their Willow Creek mine, both in British Columbia. The Gibraltar mine and

Prosperity project of Taseko Mines are both located within its borders, as is their earlier stage Harmony Gold project and Aley Niobium project.

The operations of Imperial Metals, a mid-tier company that has also chosen to not stray too far from home, exemplifies the diversity of metals buried beneath British Columbia's soil. Its Mount Polley mine produces copper, gold and silver, and the Huckleberry mine, in which it holds 50% equity, produces copper, gold, silver and molybdenum. Their exploration and development properties span a breadth of metals including copper, gold, zinc, lead and molybdenum. All of these bar one, the Sterling Gold project in Nevada, are located in British Columbia.

Even those who have moved beyond the province's borders seem to be returning. Silvercorp Metals, having grown its market capitalization to more than \$2.3 billion since its establishment seven years ago by capitalizing on its producing properties in the Ying mining district, China, has since shown an increased focus on British Columbia, "Our Silvertip project in British Columbia is extremely high grade and could potentially serve as a foundation for further expansion within Canada," said Dr. Rui Feng, chairman and CEO of Silvercorp Metals. "Canada, of course, is an extremely mineral-rich country, with a huge amount of resources, and we would like to have an established operational presence here."

Most famous of all, of course, is Teck Resources, Canada's largest diversified miner. Tracing its roots back to 1906 and the Sullivan mine in Kimberley, British Columbia (operated at the time by The Consolidated Mining and Smelting Company of Canada, subsequently renamed Cominco and merged with Teck-Hughes Gold Mines Ltd. to form Teck Cominco), Teck still retains a preference for its home county. With interests spread throughout North and South America, seven of its 15 mines are located in British Columbia.

"Teck derives approximately 60% of its profits from the Highland Valley Copper mine, located in South Central British Columbia, the Trail operations in northern British Columbia, and our coal operations in the province. Around 40% of Teck's workforce is employed in British Columbia," said Doug Horswill, senior vice president of sustainability and external affairs, Teck. "The importance that the company places on British Columbia looks set to continue in the future; moving forward, Teck will increase coal production by about 25%, and we aim to reopen a coal mine called Quintette in northeastern British Columbia."



A haul truck carries steelmaking coal at the Coal Mountain mine, located 30 kilometres southeast of Sparwood, British Columbia. (Photo courtesy of Teck Resources Limited)



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### The junior players in the mining industry of British Columbia

The success of these majors, and indeed all of British Columbia's mining activities, relies on the host of junior exploration companies working in the province. British Columbia accounted for approximately 16% of Canada's total exploration expenditure in 2010; a budget of C\$322 million.

While the major and mid-tier do maintain exploration teams, increasingly they are looking to acquire properties or entire companies from the junior market.

"Ultimately, the dream of every junior company is to make a massive discovery that prompts a senior player to buy you out at a premium," said Morgan Poliquin. president and CEO of Almaden Minerals.

This ambition is echoed throughout the industry. "Jayden's expertise lies in exploration and resource development. At some point in the future it may make sense to bring in a senior partner who has the experience to take the project to a production stage," said Robert Felder, president of Jayden Resources, describing the plans for the Silver Coin project, an advanced stage gold-silver property that shows similarities to the Silbak-Premier mine only three km away. "For the moment, however, Jayden

is very well-equipped with the expertise and experience to continue to add value and advance the development of the Silver Coin project."

This focus on the pre-production stages of a projects development is not imposed by questions of resources and size. Even Manex Resource Group, an umbrella organization whose seven constituent companies hold highly prospective properties throughout North America, prefers to focus on its core competencies. "We believe [Bravo Gold Corp.'s Homestake Ridge property] has a lot of potential to be developed into an operating mine, especially given the excellent infrastructure in the surrounding area," says Lawrence Page, president of Manex Resource Group, picking out one of the most exciting gold-silver projects.

However, the potential shown by these projects, as well as the recent hiring of a senior mining engineer who will be able to guide projects as far as the scoping stage, does not change the nature of the company. "Manex Resource Group and its constituent companies are exploration companies, not miners. The business model that works for us, therefore, is one of acquisition or joint ventures, which bring in a senior partner with the experience and resources to take a project into production," said Page.



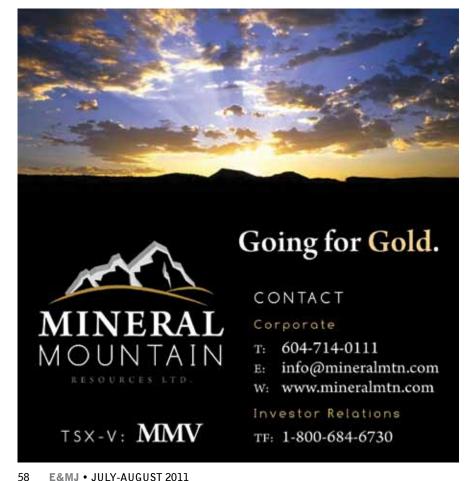
Drilling at Silver Quest's Capoose project.

Even Mike Muzylowski, a man who has been involved in all stages of mine development during his 56 year career, is very clear about the focus of his current company. Callinan Mines. "The ambition for Callinan Mines has always remained the same; to discover a deposit, outline a resource, then find somebody who wants to mine it."

Muzylowski is the president and CEO of Callinan Mines, a company that, despite a primary focus in Manitoba, also holds the rather unique Coles Creek property in the Omineca Mountains of British Columbia. Alongside a porphyry copper-molybdenum target, the property also contains a collapsed caldera deposit; a volcanic source which contains significant levels of silver, gold, lead and zinc.

This strategy is brought about, in part, due to the different natures of exploration and mining operations; something which also plays a role in the worldwide trend of majors decreasing their exploration budgets. "Silver Quest Resources is an exploration company. None of our management or technical team is involved in the mining aspect of the business and we do not want to get involved in this. The process of taking a project into production involves many years of environmental studies, engineering studies and permitting processes. We therefore would be looking to partner our projects or sell them on to a production company. Our success in the past has come from exploration and that is where it will come from in the future," said Randy Turner, president and CEO of Silver Quest Resources.

Perhaps most successfully, and an illustration of the current trends in the market, Hawthorne Gold Corp. has now changed its name to China Minerals Mining Corp., in re-





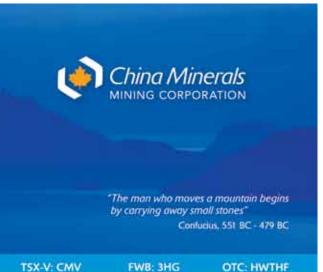
1290 Portal of Metal Mountain Resources' Dome Mountain mine. Left to right, Abel Tattersall, executive vice president of business development; Dr. Peter Fox, senior geologist; Daryl Hanson, project manager of Dome Mountain mine; David Pow, director and senior mining engineer.

flection of its new parent company, the Chinese SkyOcean Holding Co. "The Chinese have always been interested in the Canadian mining sector and the technologies and excellence that exist in Canada. The relationship with WorldLink allowed us to bring our knowledge of the Canadian mining industry to the Chinese. SkyOcean chose to invest in Hawthorne Gold because we are an experienced management team with a good asset base in British Columbia and the Yukon. Now, China Minerals can source projects for them, they can build the company by bringing assets from China, and China Minerals can help them with international acquisitions," said Michael Beley, executive advisor to the chairman of China Minerals Mining.

This asset base includes, in British Columbia, the Table Mountain project, which interestingly hosts a greenstone quartz carbonate gold system typical of Canada's largest gold camps in Ontario. "Table Mountain is a high grade underground gold mine that will produce about 20-30,000 oz/y. There is potential for low-grade, open-pit deposits as well, but that will be further down the road. China Minerals will look to put the mine back into production over the next two years. If it is feasible, we will get the mill running this season as there are a number of mining companies who would like to bring their ore to our mill," said Richard Barclay, executive vice president of China Minerals Mining.

Not every junior company, however, adopts this same approach. "We have to get up every morning and work towards bringing our assets into production," said Erik Tornquist, executive vice president and COO of Pacific Booker Minerals, who are currently waiting on their environmental assessment application to be processed before moving ahead with their Morrison project. He admits, however, there are sometimes doubts about junior companies moving into production. "There are some people who say we are not 'mining people' here at Pacific Booker because we do not have experience with all of the aspects required for developing a mine. On the contrary, the team that we have at Pacific Booker Minerals has very diverse experience and we have great consultants. There is already interest from smelters in China, Japan and India in our project, but we have deliberately taken the decision not to commit to anything that will not take us into production. We have a framework for moving forward and we are excited about moving the project through to the next stage."

Others share this optimism. "In five years time I would expect Compliance Energy to have put the Raven project into production



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J Frank Callaghan, president and CEO, director, Barkerville Gold Mines.

and be producing between 830,000 mt to 1.1 million mt of coke and coal per year," said John Tapics, president and CEO of Compliance Energy. Compliance Energy is primarily a coal-focused junior, although a host of mineral claims that they hold on Vancouver Island contain copper, molybdenum and gold. Their flagship properties. the Raven Coal underground project and the Bear deposit are both being developed in a joint venture. However, fairly unusually for a junior company, especially with partners the size of theirs, Compliance En-



Winter drilling program at Yellow Head Mining's Harper Creek project.

ergy is remaining as the operator and 60% owner in the Comox joint venture.

The benefit of having partners of this size (LG International is the largest coal trader in Asia) is the considerable help they offer project finance. "It would be extremely difficult for a junior company like Compliance Energy to fund a project on this scale without this support," said Tapics.

Asian interest in British Columbia has also benefited Huakan International Mining, having the backing of Tianjin Huakan Group Co. is allowing them to develop their flagship polymetallic J&L project with a view to production. "Huakan is looking to take J&L into production," said Paul Cowley, vice president of exploration for Huakan International Mining. "After the second phase of drilling, Huakan would like to take J&L to a pre-feasibility and permitting level, and ultimately to a production decision. Because Huakan has Tianjin's financial and technical expertise, the company has the capital and the staff in order to take J&L into production ourselves, unlike other junior companies."

Other companies, however, have decided to proceed on their own, eschewing the standard business model of the junior industry. On September 15, 2010, Barkerville Gold Mines poured their first gold bar from the QR mine, in the process becoming British Columbia's newest gold producer.

Hoping to achieve production targets of 50,000 oz this year and upgrading that to 65,000 oz next year, they are also actively pursuing a second and even third mine in their aim to become a mid-tier producer. "By 2013, we are planning to upgrade our second mill that we purchased, which is currently a 1360 mt/d facility, to 3000 mt/d. This will be fed by production from Cow Mountain (the Cariboo gold project), which we are still drilling to develop the resource and we feel has the potential for an open-pit operation," said Frank Callaghan, president and CEO of Barkerville Gold Mines.

Taking their properties into production as a private, family-run, company, Metal Mountain Resources face a rather daunting task. Nonetheless, the ongoing success of Metal Mountain Resources - the defining of NI 43-101 compliant resources on both the Dome Mountain project and the Big Onion project and their continued advancement toward production - has made this business model easier to continue.



"Now that we have established exciting projects we have financial institutions frequently calling in order to finance us. We have protected our shareholders, kept control of the company and will trade on our own terms when we decide to take the company to market," said Lloyd Tattersall, president, CEO and senior founder of Metal Mountain Resources.

Yellowhead Mining has adopted an even more courageous approach. "Yellowhead Mining was established in 2005 specifically to develop Harbour Creek, which is the only asset the company has and the only one we plan to have in the near future," said lan Smith, CEO of Yellowhead Mining Inc.

Their courage in concentrating on just a single property seems to be paying off. Since acquiring the property they have increased the initial resource estimate by almost ten times. The current reserve sits at 4.3 billion lb of copper in the measured, indicated and inferred categories. "The ultimate goal is to have a 70,000 mt/d operation, which will be an open-pit mine with large-scale equipment," said Smith.

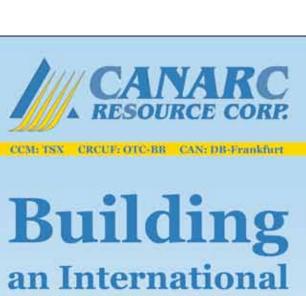
Companies such as Almaden Minerals, who hold significant properties among their 40-plus strong portfolio, despite being driven primarily by positive drill results on their lxtaca property in Mexico, represent a middle path between the antinomy of these two approaches. "Almaden Minerals is a prospecting company and as such our focus is on the very early stage exploration activities. These activities require relatively low capital in comparison with later development activities, such as drilling or construction. However, the odds of success are also far longer. Our strategy, therefore, is to spread and dilute the risk. We will retain interests in our properties whilst looking for joint venture partners to develop them and continue our prospecting activities at the same time," said Morgan Poliquin, president and CEO of Almaden Minerals.

All of these strategies have their benefits and their risks. Real success, arguably, has less to do with underlying philosophy than the ability of the management to implement that philosophy. Luck, of course, also plays a part. "Serendipity does play a large role in our activities," said Poliquin. "You never know what Mother Nature will deliver to you, so in the meantime we will continue in our current business model, which has proven to be sustainable and successful."

### The mineral resources of British Columbia

Mother Nature has been kind to British Columbia. In the past ten years sales from both metal mining and coal mining have separately exceeded C\$21 billion. In 2010, the province produced a broad array of metals: antimony, cadmium, copper, gold, iron ore, lead, molybdenum, silver and zinc. Even more are being discovered. Although taking a sharp dive with the economic recession, exploration spending has since risen and reached a healthy £322 million in 2010. Projects like the Brucejack project of Pretium Resources, which contains 8.2 million oz of gold and 116.1 million oz of silver at a cut off grade of 0.3 gold-equivalent g/mt in measured and indicated resources, and the same company's adjacent Snowfields project, which contains 25.9 million oz of gold, 75.8 million oz of silver, 258.3 million lb of molybdenum and 22.5 million oz of rhenium in measured and indicated resources, show the extent of mineral wealth the province still holds.

Arguably the most exciting portion of this exploration spending, although similarly the most risky, is that focused on early stage projects. Callinan Mines, for instance, have shown an admirable ability to find green field projects and are now looking to split into two companies, with one taking control of their advanced stage assets and the second focusing on grassroots exploration. BCGold Corp. has a stated strategy of looking for new discoveries. "BCGold

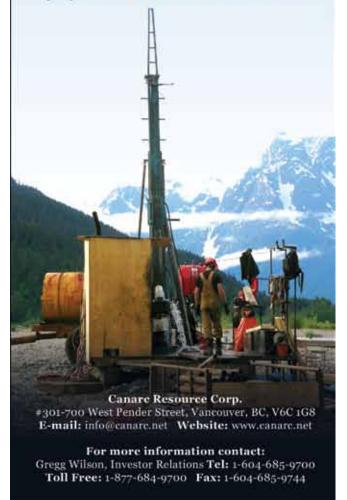


# **Gold Producer**

Core Asset: +1.1 million ounce New Polaris Gold mine, British Columbia.

Tay LP: 20 km x 4 km Tintina Gold Belt exploration project, Yukon

Windfall Hills: new gold exploration project in Central British Columbia.





is a generative exploration company. We deliberately look for undiscovered prospective properties or opportunities that have escaped the market's notice." said Brian Fowler, president and CEO.

Although their flagship Engineer mine project is a historically producing mine, BCGold's Sickle-Sofia and Voigtberg properties have only had limited and sporadic work done on them before their acquisition by BCGold and the company has also staked a string of previously unexplored claims, including Bonaparte, Rayfield, Dartt Lake and Clear Range.

The mineral wealth of British Columbia is such that it is not just new deposits that are being found, but new types of deposit. "The Bonanza Ledge part of the property contains a completely different type of gold mineralization, not only when compared to the rest of the property but compared to anywhere. It is high grade, disseminated gold in a sericite-carbonate altered dolomitic phyllite - essentially a shale-like mudstone. This type of gold mineralization had not been recognized prior to our work and Barkerville Gold Mines is therefore credited with the discovery of gold in a rock formation that had not been known to be gold-bearing before," said Frank Callaghan.

While not quite as unique, Spanish Mountain Gold's flagship project, the Span-



Doug Horswill, senior vice president, sustainability and external affairs, Teck Resources Ltd.

ish Mountain property, also pays credit to the diversity of mineralization in the province. With a NI 43-101 compliant resource of just under two million measured and indicated gold oz and the inferred resource just over doubling that, what is unusual about this property is that it is one of British Columbia's first recognized occurrences of a sediment hosted gold system. The company's Thunder Ridge project, located 100 km to the south of Spanish Mountain, promises similar geology. Mineral Mountain Resources, looking for similar deposit types, established the potential for their

Kootenay Arc property to hold Carlin-style gold deposits, so far found only in Nevada and, more recently, Yukon.

In addition to these development projects being carried out by the plethora of junior companies, an increasing amount of exploration is being carried out around producing or historically producing mines. Majors, increasingly cutting back on their own exploration budgets and eager to make use of existing facilities, are focusing more and more on expanding their existing reserves.

Imperial Metals used the rising price of copper, gold and silver to reopen their Mount Polley mine in 2004. "Although the mine was decommissioned between September 2001 and March 2005, the rise in commodity prices have made the mine a very profitable operation, thus providing the cash flow necessary to develop other projects," said Brian Kynoch, president of Imperial Metals.

Arguably Teck's most impressive achievement in the province has come through the continued development of their existing operations. "There is also opportunity at existing or historical mines to add to Teck's resource base, such as at the Highland Valley copper mine," said Doug Horswill. "The Highland Valley copper mine was expected to close in 2008, but using new geological technologies and other developments, we have been able to extend the mine life to 2019 and will likely be able to extend this even further."

Even the junior companies are capitalizing on the current boom in mineral prices. "The international mining community as a whole is in a time where ore bodies that were not economic a few years ago can now be turned into profitable projects. Commodity prices continue to increase and this is reopening doors that had previously been closed," said Jim Excell, CEO and president of Abacus Mining and Exploration. "British Columbia contains a plethora of projects which have been looked at before and have had substantial amounts of work done on them, so can very quickly be brought into the feasibility stage."

Abacus Mining's own Ajax property, a copper-gold deposit well funded by their joint venture with KGHM Polska Miedz, the world's ninth largest copper producer, contains two historical pits: Ajax East and West.

Similarly, the flagship property of Canarc Resources, the New Polaris gold mine, has a history stretching back to 1929. This substantial development, however, has not stopped Canarc Resources from coming up with a resource of more than 1 million oz at an 8 g/mt cut off, which they hope to



Taseko Mines' assets include the 75% owned and operated Gibraltar copper-molybdenum mine (pictured), as well as the Prosperity gold-copper, Aley niobium, and Harmony gold projects.



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double as they drill at depth. "The current resource has been drilled from 150 m deep down to 450 m below sea level but there are five drill holes down to 700 m deep, all of which intersected the same high grade vein. Our view is that resources could easily double or triple as we get deeper into the system so the project has good exploration upside and excellent development potential in this gold environment," said Bradford Cooke, president and CEO of Canarc Resources.

Duncastle Gold Corp.'s Prophyry Creek copper-molybdenum project, in northwest British Columbia, and Yankee-Dundee project, in an area of southeast British Columbia, both incorporate historically producing sites. The latter incorporates the majority of the former Ymir camp; at one time the largest silver producer in the British Commonwealth.

The flagship property of another company falling under the Manex Resource Group umbrella, Bravo Gold Corp., has also been subject to significant historical interest. Although never home to a producing mine, the Homestake Ridge property has seen exploration activity dating back to 1914, including, more recently, work by Teck Cominco focusing on the properties VMS potential. Bravo Gold's adjacent Kinskuch property similarly holds an exploration history that dates back to the early 1900s.



Jim O'Rourke, CEO, Copper Mountain Mining Corp.

Away from the well-known metals present in these projects, the commodity boom is benefiting just about every mineral. Commerce Resources has seen its share price rise by about 500% since July 2010 on the strength of its Blue River tantalumniobium project in British Columbia.

The passing of the Dodd-Frank financial reform passed in the United States last year, which prohibited American companies from sourcing tantalum from the Democratic Republic of Congo, played a major role in this jump.

Soaring prices are not the only factor behind these exploration and development successes, however. Part of this trend has been enabled by improving technology, a component perhaps best illustrated by the expansion of Taseko's Gibraltar mine. "Although the Gibraltar mine has quite a long history, it must be remembered that historical production was severely limited. The maximum depth of extraction, due to restrictions in equipment and economies of scale, was only 600 or 700 ft. Today we would be comfortable with developing pits as deep as 1800 ft. With Gibraltar mine, our drill testing indicates that the ore body goes down to a huge depth and it is only now that we can recognize the deposits full potential," said Russell Hallbauer, president and CEO, Taseko Mines.

The operations of First Coal, a company holding a significant land position with a historic resource of 1.6 billion mt of primarily metallurgical coal in the historic Peace River coal district, demonstrate the willingness of Vancouver juniors to make use of technology.

The current focus of First Coal is on the Central South and South Cirque properties; in order to exploit these properties they are utilizing the ADDCAR Highwall Mining System.

"The Central South property will be the first time that the ADDCAR Highwall Mining System has been used in Canada. However, there are a number of units operating in the United States, a few in Australia and two more have just started operating in India. It is, therefore, a proven technology and one that we are confident offers the most economically efficient option for the Central South property," said Douglas Smith, president and CEO of First Coal Corp.

The Copper Mountain project, flagship and sole property of Copper Mountain Mining Corp., is similarly benefiting from modern equipment.

"Rising copper prices were not the main attraction to purchase the project. Because we were familiar with the project we viewed it as an advanced exploration project with a good chance for development as a new mine," said Jim O'Rourke, CEO of Copper Mountain Mining, explaining the reasons for Copper Mountain Mining's return to a previously producing mine which had been closed in 1996. "The new operation utilizes about C\$95 million of much larger new mining equipment and the new processing plant has doubled the capacity of the previous operation. These developments greatly enhance the efficiency of the mine. With our current development, Copper Mountain will operate at 35,000 mt/d and produce over 105 million lb of copper per year compared to the mine's historical operation of 50 million lb copper per year."



Drilling at Bravo Gold Corp.'s 100%-owned gold and silver Homestake Ridge project near Stewart BC. (Photo courtesy of Manex Resources)



A Carlin-trend consultant aids ATAC's staff with identification of sedimentary structures at the Rackla gold project.

# The history of the mining industry in Yukon

While Canada as a whole ranks 229th in a list of the population densities of the world's 240 sovereign nations and dependent territories, Yukon goes a few better. If it were included in the said list, it would rank 239th, beaten only by Greenland. These two rivals are actually very similar; Greenland is physiographically part of North America, despite its historical and political links to Europe. Both are, in common perception as well as reality, remote, ice-covered and cold.

As seems to be common in these remote and often inaccessible places however, the wilderness in whatever form covers significant amounts of natural wealth. Greenland's relatively new mining industry is growing; mining of rubies began in 2007 and deposits of minerals ranging from uranium to copper have been found. In these rankings, however, Yukon takes a clear lead.

Yukon is home to more than 80 known mineral deposits and 2,600 mineral occurrences. Despite this, until very recently there was only one mine in operation and in 2010 the grand total of all mineral production from the territory was a mere C\$284 million, primarily from copper and gold. It is an indication of how woeful unrepresentative of the province's true mineral abundance this figure is that it took only a single mine to almost quadruple Yukon's 2007 production to what it is today.

Nonetheless, things are changing. In 2005, Yukon had one prospecting lease staked and 188 quartz claims staked. In the year prior to March 2008 there were

110 prospecting claims staked and just short of 10,000 quartz claims. Not even the global economic downturn slowed the momentum, with an uninterrupted growth leading to 23,660 quartz claims staked between April 2009 and March 2010. Yukon Minister of Mines, the Hon. Patrick Rouble, argues that Yukon enjoys a near unique status. "Yukon is at a cross between two worlds: on the one hand, we are part of a mature, established country with strong institutions and established legislation; on the other, many parts of the Yukon are undiscovered, underdeveloped or underexplored, and it is possible to make significant new finds here, which has happened in recent years. We have the best of both worlds: security of investment and massive exploration potential."

Similarly to British Columbia, although for entirely different reasons, Yukon also experienced the 1990s as a decade of declining interest and little activity. The turnaround, however, was longer and more arduous, and its results more dramatic, than the simple change of government that occurred in its southern neighbor.

In 2003, the Yukon government took over full responsibility for mineral exploration and mining, cutting out the second-tier federal government that causes so many problems in British Columbia. The simpler permitting process that resulted from this was followed by various other government initiatives, such as the amendments to the Quartz Mining Act in 2008 that lowered exploration costs and ensured that mine development royalty rates remained competitive. Combined with federal flow-through

shares and the Yukon Mining Incentives Program which provides funds for prospectors and it is easy to see why Yukon made it into the top 15 of the Fraser Institute rankings of mining companies' perceptions of the world's jurisdictions.

On the topic of the harmonized permitting system, Minister Rouble said, "It allows us to offer Yukon solutions to Yukon issues. It means that the people doing the assessment are intimately aware of the relevant environmental and socio-economic conditions on the ground."

The Yukon has managed to achieve the 'holy grail' in terms of community relations; a unified permitting system which First Nations have brought into and are an active part of. "It was agreed when Yukon and federal governments were making selfgovernment agreements with the First Nations that having 15 different regulatory processes would not work. This led to the development of a Yukon Environmental socio-economic assessment process, which looks at all projects, whether on federal, territorial or First Nation land." said Minister Rouble. "We clearly benefit from having a one envelope system. We are trying to reduce it to one page, but we are not in the business of reducing standards in the Yukon. We aim to set the bar and help people jump over it."

The territory does, however, still retain a physical staking system. While not a major impediment, it is a touch arcane and an unwelcome upfront cost of the explorer. "The Yukon is less efficient on acquisition because it still uses ground staking as opposed to the more efficient electronic paper



# THE RACKLA GOLD PROJECT Y U K O N

DEVELOPING CANADA'S ONLY CARLIN-TYPE GOLD DISCOVERY

2010 Drill Results

Tiger Zone

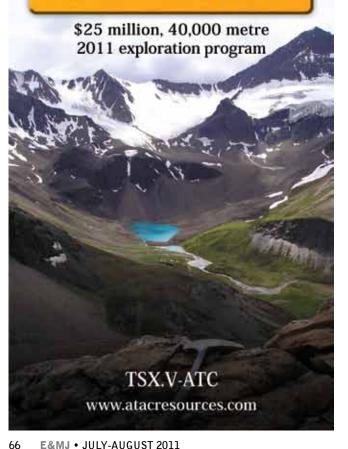
17.11 g/t gold 38.80 m

Osiris Zone

4.65 g/t gold 65.20 m

Conrad Zone

8.03 g/t gold 21.13 m



staking which British Columbia uses, called the MTO, mineral title online," said Brian Abraham of FMC. "I understand why the Yukon still uses ground-staking; it provides employment. But employment that adds nothing to the search for minerals. It is an upfront cost and I feel it is just a matter of time before the Yukon goes to the electronic system."

While the actions of the government set the stage, however, it was the players on it that drew the attention. Shawn Ryan, awarded Prospector of the Year in March this year by the Prospectors and Developers Association of Canada, found the White Gold deposit, believed to hold two million oz of gold, which was sold to Underworld Resources who were subsequently bought by Kinross Gold Corp. At around the same time as Shawn Ryan's discovery, ATAC Resources made their first significant gold discovery at the Rau project. From then until now, a steady stream of increasingly positive news has flowed from both of these sources, including the first example of a Carlin-type gold deposit outside of Nevada, the Osiris deposit, in the Nadaleen trend of ATAC Resources Rankla project.

### The key players in the mining industry in Yukon

Given the relative youth of the mining industry in Yukon, few companies have as dominant a position as that occupied by Imperial Metals, Western Coal or Teck in British Columbia. Indeed, with total production of copper in 2010 only reaching 23,034 mt and no other mineral coming close in terms of value of production, it is doubtful whether any company bar Capstone Mining could have been termed a 'major', in the technical sense of the word, based on its 2010 operations in Yukon.

Since that time, there have been a few major developments. Yukon Zinc Corp.'s Wolverine mine will be ramping up production this year, with on-site milling capabilities of 1700 mt/d to produce zinc, copper and lead concentrates. Alexco Resource Corp. achieved commercial production on their Bellekeno mine on the first day of this year, producing 1600 mt of lead concentrate and 620 mt of zinc concentrates in their first two months of operation.

The source of all the excitement, however, is gold. Most famous of the major companies in this regard is Kinross Gold Corporation, who is currently developing the property that arguably started this modern gold rush. Of comparable importance for this modern gold rush, however, and of arguably even greater potential, is the work being carried out by ATAC Resources. Having started with a small claim just outside the White Gold district, ATAC Resources have since significantly increased their holdings and in turn seen their share price increase almost five-fold.

"When ATAC Resources started working on the Rau gold project in 2006 it was a very small property that had emerged out of an exploration concept," said Robert Carne, president of ATAC Resources. "What we now have is the 1660 sq km Rackla gold project, which is a much larger area containing the original Rau property as well as several other areas of interest. We are trying to narrow down the areas of highest potential, which tend to follow certain structural trends. The Tiger zone, for instance, an oxide gold deposit that we have been drilling since 2008 is in the Rau trend and it includes about a dozen gold occurrences, as well as a few silver showings, continuing over 40 km. 100 km east of that is the Nadaleen trend, which has a 30 km strike length of gold mineralization in four areas so far. We also have geochemical anomalies over another 20 km strike length." The allure of gold is hard to avoid, but Yukon's fortunes may lie in more mundane metals. In the central Yukon, the Faro pit was once the world's largest leadzinc mine. The mine is now closed (and in the midst of a protracted reclamation process), but others are once again mining zinc and lead from Yukon's earth.

Yukon's most recent mine, Wolverine, was put into production by Yukon Zinc in 2010 and the company have been pushing forward to full production through 2011. The government is keen to encourage diversification of the Yukon's mining industry and the opening of Wolverine is a major step down that path. "Whether in lead, zinc, copper, gold – there is a whole periodic table of opportunities here. Having a diverse economy will help us weather storms that may come in the future, and this feeds into what the government is doing regarding mineral extraction" said Minister Rouble.

Wolverine's current P&P reserve is 5.15 million mt of ore grading 9.66% zinc, with 281.8 g/mt silver, 0.91% copper, 1.36 g/mt gold and 1.26% lead. The mill has a capacity of 1700 mt/d.

Beyond the fact that Wolverine is one of only a handful of new mines to have actually been put into production in the Yukon, the mine is particularly interesting because it was built with Chinese money. Much attention has been garnished on the phenomenon of Chinese investment into foreign natural resource assets, but Wolverine is one of only a handful of Canadian mines actually owned by a Chinese firm. "We were publicly traded until mid-2008, when Jing You Lu (Yukon Zinc's present

chairman and CEO) made several visits to Vancouver on behalf of the Jinduicheng Molybdenum Group (JDC). JDC and Northwest Non Ferrous took Yukon Zinc private and have subsequently brought on board four additional Chinese investors," said Pamela O'Hara, vice president of environment and community affairs for Yukon Zinc.

"JDC is very big in China, covering the whole mining and metals industry, with many subsidiaries - exploration, mining, processing, technology development and training," said Lu, now chairman and CEO of Yukon Zinc. "It's a very unique company in terms of its diversity. China needs minerals and Canada is a very good place in which to invest in mining assets to meet that need. Acquiring Yukon Zinc was a very important step for JDC in working towards its global development strategy."

It greatly helped that, at a time of financial crisis, JDC and its partners had deep pockets. "We have a huge financial base: up to \$20 billion of 'sleeping' deposits at any one time" said Lu. "Along with Northwest Non-ferrous, a sister company, we took an interest in Yukon Zinc around the time of the global financial crisis and made the deal after seven or eight months of discussion."

The development of Wolverine has not all been smooth sailing for the company.

"Two years ago, a fatality occurred as a result of an underground vehicle accident with our contractor's employee, and in 2010 the mine had a fatality underground due to a ground fall. Throughout the development phase and particularly in recent operations Yukon Zinc, together with its site contractors, has strengthened its safety department and programs. Jointly all companies have incorporated best practices into existing policies and procedures and have implemented more extensive training and safety measures, including enhanced underground geotechnical engineering work, which has led to positive results," said Raymond Mah, COO.

With little exploration conducted at Wolverine since the takeover, it looks as though Yukon Zinc will expand their resource further in the coming years. "We are very lucky to also have a high grade silver aspect, which has risen significantly in value since the feasibility study," said Mah. "However, it looks like the companies behind Yukon Zinc have a wider and larger North American strategy than this one corner of the Yukon. Yukon Zinc could be a vehicle from which we can make further inroads into the Canadian and American markets. We certainly hope to make further investments," said Lu.

### Mining Beyond Borders





Production People Growth

**Yukon Zinc Corporation** - a mining, exploration and development company committed to operating safely and responsibly in the global business environment. Currently the company is increasing production at its Wolverine Mine in Yukon Canada and focusing on strategic growth opportunities.

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### The junior players in the mining industry in Yukon

The success of ATAC Resources and Kinross Gold has, in typical fashion, inspired an influx of smaller companies all carving out their own piece of Yukon's rugged wilderness. Primary among them are those seeking the initial cause of historic and current excitement in the region: gold.

Gold deposits in the territory follow a rough northeast trend following the Tintina Gold Belt, which, lying between and to the east of the Tintina Fault and the Denali Fault, curls down from Alaska, through Yukon, to just pierce the very top of British Columbia. Situated in this belt is the White Gold area of Kinross fame and, just outside it, the Rankla project of ATAC Resources. Staking their claims around these properties, the swarm of juniors resembles moths around a porch light. Pleasingly, there is much more strategy, purpose and potential for profit in the activities of these juniors than the analogy would imply.

Kaminak Gold, as one of the most successful of these juniors at the current time, holds 150,000 acres within their Coffee gold project. The success of their 2010 drill program, which had a 100% discovery success rate on eight targets within a 15 km strike length, highlights one of the most in-

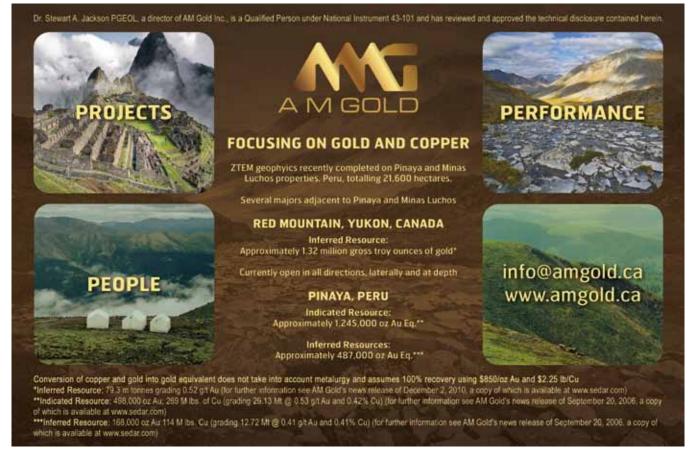


View above Skukum Creek portal, showing the Wheaton River valley. Photo courtesy of New Pacific Metals Corp.

teresting and promising features of the area. "This area has never been glaciated, so soil sampling is our primary exploration tool. We find gold soil anomalies and drill underneath them," said Tony Reda, vice president of corporate development for Kaminak.

This lack of glaciations in the region means that often geochemistry is the most effective preliminary exploration tool, as soil anomalies have not moved far from their source. Pacific Ridge Exploration saw a jump in their share price in July last year, based primarily on preliminary soil sam-

pling results on their Klondike Kate group of properties; Mariposa, Goldcap, Stewart/ Polar and Eureka Dome. "The potential of Mariposa is best shown by its very similar geology and soil geochemical results to the Coffee gold project of Kaminak and the former Underworld property that was purchased last year by Kinross Gold for approximately C\$140 million," said John Brock, president and CEO of Pacific Ridge Exploration. "Given these similarities, we would be looking for a minimum of 1 million oz on the Mariposa project."





The Homestake Zone, within Monster Mining's Keno Lightning property, is less than 1km from Alexco Resource's Bellekeno Mine.

The largest landholder in the area, Silver Quest Resources, places a similar importance on geochemical work. "Silver Quest Resources has made a number of acquisitions in the White Gold area of Yukon this year. These acquisitions are all based on geochemistry work or soil sampling that we have carried out, or potential shown through regional or structural studies of the area," said Randy Turner, president and CEO of Silver Quest Resources. Silver Quest Resources now holds more than 6000 claims in the Dawson Range, with a stated strategy of obtaining a very large land base in order to define more targets. "At this stage, Silver Quest Resources is focused on the Boulevard property. This property continues from the west and south borders of the Coffee Creek discovery and sits on a major geological trend that runs for approximately 20 km and is high in gold and arsenic," said Turner. "We have carried out limited drilling, found intersections of gold and intend to carry out 15,000 m of drilling and 10,000 geochemistry samples this year."

Located on a belt of gold showings in a pyrite quartz carbonate vein system very typical of the Tintina Gold Belt, Canarc Resources has identified drill targets from an airborne survey conducted last year on their Tay-LP Project and are looking to drill these this year. Central Resources' TAC claims, located about 60 km south of Whitehorse and 16 km north of the historic Mt. Skukum gold mine, show very early stage potential for low-grade bulk tonnage gold mineralization. New Pacific Metals Corp.'s Tagish Lake gold project, which contains the former Mt. Skukum gold mine, hosts the same type of mineralization as the Tay-LP project and holds 517,463 gold equivalent oz in measured and indicated reserves.

Strategic Metals is arguably the grandfather of Yukon's junior industry. Formed out of Archer, Cathro & Associates, which was set up in 1965 to focus specifically on Yukon and was instrumental in the discovery of the Casino deposit now being developed by Western Copper, Strategic Metals comes from an unrivalled knowledge base. "Strategic Metals has grown rapidly by following a typical generative model of exploration, but on a much larger scale than most other companies of this type," said Doug Eaton. "Essentially, we have taken intellectual property and converted it into tangible value. We have utilized our knowledge, gone out and staked claims

and advanced them until we can bring in partners. We have then structured deals allowing the incoming party to gain a large project interest in exchange for share and/ or cash payments, with Strategic retaining a royalty interest."

This knowledge has led to them being involved in a staggering proportion of the territory's projects, including ATAC Resources' Rankla project. In the four months during the 2011 exploration season Strategic Metals will be spending C\$50 million to C\$60 million on behalf of themselves and various clients, which is more than the combined spending for the first five years of this decade. Even at the time of writing they were in the process of setting up a new company, Silver Range Resources, to focus on the Silver Range property, a porphyry-style silver-zinc-lead-copper deposit.

Throughout the years of low precious metals prices, Yukoners continued to prospect for silver and gold. Seeking to take advantage of today's high prices and the pools of capital in nearby Vancouver, some groups of seasoned hands are floating their companies and intend to push forward with aggressive exploration programs.

Monster Mining is a classic example of this trend. The company was founded by a group of friends who were prospectors and





Eagle Gold project in Dublin Gulch, Yukon. (Photo courtesy of Victoria Gold Corp.)

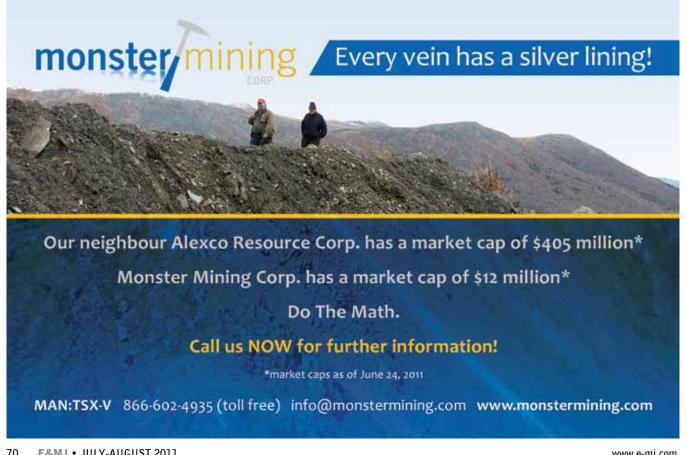
geologists in the Yukon. "In 2007, they staked what they saw as being one of the best prospects in the area, 35% of the Keno district. This is a prolific silver area. Since 1920, the Bellekeno mine, our neighbor, has produced 300 million oz of silver. They also staked McKay Hill, along the Tintina gold-belt, another very prolific area," said Robert Eadie, president and CEO. In such a small community local knowledge can really help when it comes to securing land and progressing work. "The people behind the company have been in the Yukon for over twenty years, and one director, Bill Harris,

is a second generation prospector there. This allows Monster to move in many directions and helps us operate," said Eadie.

Eadie runs the I Mining group of juniors and has a long history of raising exploration dollars. Gaining the support of a larger, more commercially focused organization lets prospectors focus on geology and operations. "The original management became a little bogged down after the 2008 hit so they approached I Mining and I came aboard Monster a year and a half ago with the purpose of pushing them forward, raising money and taking them public," said Eadie."They are a very exciting company, with a land package that would be almost impossible to gain today."

While the remnants of the Klondike Gold Rush still pan for placer gold around Dawson City (maintaining a 100,000 oz/y industry) and the majority of companies are clustered close by in the White Gold area, other companies are expanding these targets. Argus Metals, for instance, is exploring the Watson Lake mining district in Yukon's southeast corner. What is interesting about their Hyland gold project, and what holds promise for other companies venturing outside the traditional central Yukon area, is that Argus Metals is sitting on essentially the same geological model as ATAC Resources' recent gold discovery, approximately 500 km away.

In fact, the Hyland project is located in the Selwyn basin, an area known primarily for its lead, zinc and silver sedimentary-exhalative massive sulphide deposits. In the same geological trend, although much further north, lies the Dublin Gulch property of Victoria Gold. The Eagle gold project contained within this property is in the running to be Yukon's next producing gold mine and, primarily on the strength of this project, Victoria Gold has enjoyed enviable growth. "Three and a half years



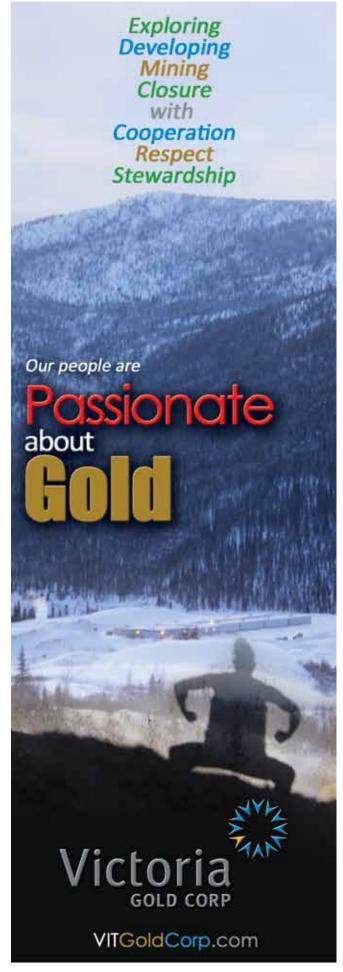
ago Victoria Gold had three properties in Nevada, we had a market capitalization of around C\$15 million, traded approximately 10,000 shares a day and were C\$2.5 million in debt," said John McConnell, president and CEO of Victoria Gold. "Today we have a flagship property in Yukon, a small high grade underground project in Nevada, a market capitalization of around C\$250 million, trading approximately 1 million shares a day and we have C\$25 million cash in the bank. We are in very good shape for a junior company."

The flagship Selwyn project of the aptly named Selwyn Resources, also sitting in the Selwyn basin, is a more typical type of deposit for the area. It has an indicated resource of 18.19 billion lb of zinc and 6.31 billion lb of lead and an inferred resource of 23.43 billion Ib of zinc and 7.28 billion Ib of lead. In fairly close proximity, Pacific Ridge Exploration's Fyre lake project shows promise not only for copper, but also for cobalt and a significant gold credit. As with a multitude of projects mentioned in our article on British Columbia, resurgent metal prices has increased interest in this project. "The Fyre lake project has been dormant since the late 1990s, primarily due to other obligations on our part, however we are now going back to it and looking to rerun the economic assessment, which was based on significantly lower commodity prices than we are seeing now. The object of this is to see whether we will be able to lower the copper cut off grade, which at the moment stands at 1%, and in doing so increase the resource size," said John Brock of Pacific Ridge.

As demonstrated above, gold is by no means the only mineral of substance in Yukon, despite being the primary driver of exploration activity. Exploration projects in 2010 were exploring targets for gold, silver, copper, lead, nickel, zinc, platinum group metals, uranium, molybdenum, rare earth elements, coal, iron and others. Tungsten projects, dotted around the southeast corner of the territory, include the Mactung project of North American Tungsten, the world's largest commercially viable deposit of tungsten. The Eagle project of Avino Silver & Gold Mines, is located in the Keno hill mining camp. This camp is known for gold and silver deposits, historically one of Yukon's largest producers of these minerals. Surprisingly, however, Avino Silver & Gold Mines have discovered significant amounts of indium in the property, in concentrations of up to 285.4 g/mt over 1.8 m.

It is, in fact, copper, rather than gold, which is Yukon's primary mining product. The 23,034 mt that the territory produced last year accounted for C\$176,921 million of its C\$284,055 million total mineral production. The Minto mine of Capstone Mining has been the cornerstone of Yukon's mining industry since it commenced commercial production on 1 October 2007. Although production fell in 2010 (due to heavy rainfall), new NI 43-101 compliant resources for four separate undeveloped deposits on the property and a ramping up of design capacity to 3200 mt/d, almost double the current capacity, promises a continued role for the mine for the foreseeable future. Soon to join the Minto mine is Western Copper Corp.'s Carmacks project. Fully permitted for construction, the Carmacks mine will produce 14,500 mt of copper annually. The Casino project, in the same belt, is rapidly moving toward the feasibility stage and contains reserves dwarfing those of both the Carmacks mine and the Minto mine.

BCGold, the largest landholder in the Carmacks copper-gold belt where the Minto mine is located, is looking to continue the rich tradition of the area. A total of 17 properties held by the company are being methodically advanced, with drilling programs carried out on three of them, two others optioned out to partners, and a significant discovery has already been found. "To be the largest landholder in a belt which already contains one operating mine and one mine coming into production in the near future is a very promising position to be in," said Fowler.





# The history of the mining industry in Vancouver

Contrary to popular myth perpetrated by proud miners, Vancouver did not start as a mining town. The first gold rush in the region, the Fraser Gold Rush, bypassed the site of the modern town and headed straight for New Westminster. It was four years later, in 1862, that the first European settlement was established in the area: a ranch.

The 'dark ages' of the 1990s have already been documented in our article on British Columbia. What has not been discussed is the positive role this played in establishing Vancouver in its current role as a global center for exploration excellence. "Conversely, one of the things that benefited Vancouver was the unfriendly regulatory environment of British Columbia in the 1990s. The government of that time delivered a series of policies that restricted mining activity in the province and as a result many of the junior companies left their headquarters here, but took their expertise elsewhere. This helped establish Vancouver as an international hub as it helped set up a global network of Vancouver-based miners. The mining industry is very portable; when the regime gets tough it will simply pack up and leave. Vancouver learnt this early on," said Graeme Currie, director at Canaccord Genuity, explaining why it was that, as the British Columbian mining industry faltered, Vancouver maintained a steady path.

In 2009, when exploration expenditure in Canada fell by more than 50%, dropping the country to third place amongst the top exploration regions after it had held the second spot since 2002, companies based in Vancouver (and the few located elsewhere in British Columbia), still accounted

for 15% of the entire global exploration expenditure, according to a report by the Metals Economics Group. Fully 30% of the total number of active mineral exploration companies around the world were based in the province, the overwhelming majority of them in its most famous city.

Today, Vancouver is the undisputed capital of the global mineral exploration community. It is home to more than 1200 junior exploration companies and 2400 companies serving the mineral sector. Companies from Canada are active in more than 100 countries outside its borders, and with 50% of Canadian exploration and mining companies based in Vancouver as of 2008, it is fair to guess that Vancouverites have a presence in most of those. The Vancouver based Canaccord Financial, arguably the most important finance company in the Canadian mining industry, has financed projects in 72 countries over the past two and a half years. These globe-trotting companies are looking for just about every mineral you can think of, and many that you cannot. Given this, an examination of where and on what these companies are focusing provides a snapshot into larger global trends.

### Education and the workforce in Vancouver

It takes more, however, than unfriendly legislation to form a hub of Vancouver's strength. The appeal of Western Coal to Walter Energy, who paid a hefty C\$3.3 billion to acquire all outstanding common shares in the company, also demonstrates another striking feature about British Columbia's majors; their international reputation for technical excellence. "In northeast British Columbia we have some of the most

experienced and technically adept surface miners in the world," said Calder. In their particular case, the combination of this expertise with Walter Energy's experience in underground longwall operations will form a strong diversification of mining methods.

While this transaction may have been towards the more expensive end of the scale, it is by no means the only one. The management team of B2Gold is the resurrected talent that built Bema Gold Corp., another Vancouver company who were bought by Kinross Gold for C\$3.5 billion. In the past year, China Minerals Mining (previously Hawthorne Gold) were acquired by the Chinese SkyOcean Holding Company; Tianjin Huakan Group Co. acquired a controlling interest in Huakan International Mining (previously Merit Mining Corp.) and Coal Hunter Mining was acquired by Cardero Resources Corp., another Vancouver company.

The attraction for these investors to buy into the Vancouver mining industry is not simply the deposits that their acquisitions own. The global mining industry is due to suffer a shortage of experienced skilled workers in the next decade. Canada alone will require 60,000 new skilled workers for the minerals, oil and gas sector in the next 10 years. Given this, it is the human resource pool of Vancouver that provides one of the greatest incentives for foreign investors.

Partly as a product of the British Columbian mining boom of the 1960s and 1970s, Vancouver now has the highest concentration of geoscientists of any city globally. "There is huge access to talent in Vancouver; from an engineering and geological perspective it is really unprecedented," said Mark Morabito, president

and CEO of Alderon Resource Corp. "We have some of the best schools and a long history of mining that runs deep in the community."

British Columbia boasts some of the world's foremost institutions for geosciences education. The Mining and Mineral Exploration Technology Program of the British Columbia Institute of Technology (BCIT) is the only one of its kind in Canada. The Simon Fraser University's (SFU) Department of Earth Sciences offers courses that allow their graduates to register as professional geoscientists with the Association of Professional Engineers and Geoscientists of British Columbia (APEG BC). It is the University of British Columbia (UBC) that has traditionally taken the leading role however, maintaining close links to the industry and with many of its graduates now key figures in leading mining companies. Their Department of Earth and Ocean Science is the largest earth sciences department in the country. Keeping up with the times, its new Earth Systems Science building, a state-of-the-art education and research facility, which will provide facilities for 170 graduate students, 360 major and honors students and 6400 undergraduates, is due to open in 2012.

### Mining groups in Vancouver

This human asset of Vancouver is not just an attraction to outside players. Increasingly, junior companies within Vancouver are pooling resources and leveraging off each other's abilities to develop their projects.

Often these umbrella organizations are entities unto themselves; Hunter Dickinson is perhaps the best known of this type. With a portfolio of previous companies including North American Metals and Great Basin Gold, companies such as Taseko Mines choosing to remain affiliated and a portfolio of new companies that the group is nurturing, Hunter Dickinson has significantly changed the landscape of the Vancouver junior market. "Hunter Dickinson has a foundation of employees, intellectual capital, a library of knowledge and a portfolio of opportunities," said Ronald Thiessen, CEO of Hunter Dickinson Incorporated, "From this foundation we would create companies, give each one an asset and develop that asset to the point where we could either sell the company, joint venture the project or develop it into a mine. If we made the decision to develop the project into a mine then we would build the expertise and capital of the company to be able to do this."

With its 150 employees including geologists, mining engineers, environmental engineers, biological specialists, stakeholder relations, government relations and sustainability experts, it is now the largest private mining



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Ronald Thiessen, CEO, Hunter Dickinson Inc.



Peter Brown, founder, Canaccord Financial Inc.

company in Canada and quite possibly the largest in North America. With a structural reorganization in 2008, came a new generation of Hunter Dickinson companies, now operating all around the world. "Hunter Dickinson is like a family," said Thiessen, "Raising our kids and then watching them move out. The difference is that we are not becoming grandparents but simply raising more kids."

The strategy of Zimtu Capital Corp. bears some passing resemblance to this. Technically an investment issuer, Zimtu Capital relies on three key activities; company creation through IPO or RTO processes, direct investment by financing opportunities or property transaction. The last of these involves acquiring early stage opportunities, developing them to a marketable level and then selling them on to private or public companies. In reality, this approach has left Zimtu Capital with significant interests in a number of successful companies, including Western Potash, Quantum Rare Earth Development Corp., Equitas Resources and Commerce Resources Corp. "Particularly due to our mineral property transactions, our asset base has grown considerably in the last year. We hope to build on the strong foundations and continue the momentum. In the next five years, I would like to see us expand our partnerships with geological and prospecting partners as well as increase the number of different metals we are exposed to," said David Hodge, president of Zimtu Capital Corp.

'On a rather different model, Manex Resource Group operates on the very simple concept that the more money companies save on things like administration, human resources, or office space, the more money they can spend on exploration - a point emphasized by Lawrence Page, chairman of Manex Resource Group. "The main advantage offered by Manex Resource Group's business structure is that the majority of the capital raised for our constituent companies goes into the ground rather than into administration. We have brought together a staff of approximately 40 employees, all of whom are experts in their respective fields, under the Manex Resource Group's umbrella and they can be directed to our client companies as needed. This is essentially an economy of scale. Each client company can have access to a fundraising expert, geological expert, etc, without having to permanently retain on their payroll, thus freeing up money to spend on their exploration activities."

This model has proven itself in the past, with Western Silver growing under Manex Resource Group to become one of the largest operators in Mexico. The list of companies currently under the group includes Pacific Ridge Exploration, holding very promising properties in Yukon, and Quaterra Resources, whose diverse portfolio has seen its market capitalization grow to an impressive C\$215 million, as well as Southern Silver Exploration Corp., with three high grade

precious and base metal properties in Mexico (and the Dragoon copper-molybdenum project in Arizona) looking to replicate the success of Western Silver. Closer to home, Bravo Gold, Duncastle Gold and Valterra Resource Corp. are all developing exciting projects in British Columbia, discussed in more detail in our article on that province.

### The financial advantage of Vancouver

It is said that to be successful as a mining company you need to have three things; a good deposit, good management and money. Vancouver companies find deposits all over the world. The people and money, however, it finds at home.

"Historically, the primary reason for Vancouver's dominance was the existence of the Vancouver Stock Exchange," said John Brock, president and CEO of Pacific Ridge Exploration. "The Vancouver Stock Exchange started in the early 1900s, principally to finance gold projects in British Columbia. It went through the normal cyclical downturns and lack of activity, started showing signs of coming back to life in the late 1950s, principally due to base metal markets, zinc and copper, and the first really big boom for the Vancouver Stock Exchange was during the mid 1960s with the recognition of the significance of the Highland Valley copper deposits. At that point the readily available investment capital offered by the Vancouver Stock Exchange became apparent."

Vancouver may no longer be the home of the Vancouver Stock Exchange, however this has not stopped it from being viewed as a financial hub for the junior industry. "Vancouver is the recognized international center for startup capital in the mining industry: in London the focus is on larger operations than exploration start ups, and in Sydney the focus tends to be exclusively on Australia," said Terry Bates, president and CEO of Meritus Minerals. "There is a long history of companies taking startup capital out of Vancouver and growing into some of the world's leading mining companies. Vancouver is basically the entrepreneurial center of the global mining industry, many companies are here in the city doing the same thing and the investment capital has adapted to that. Vancouver has its limitations as a financing hub in terms of major investments and refinancing; however there is no better place to come as a start up mining company for initial investment capital."

"The Canadian market is very different from many other markets around the world and what drives it is the ability to finance small and medium sized enterprises. If we look at America, for example, there are 6500 listings. Canada has 3800, despite having a population a tenth of the size, of which the top 100 listings constitute 79% of the market capitalization. The fact that 3700 companies represent 31% of the total market capitalization shows our ability to finance small business and this is a huge advantage when it comes to the junior exploration industry," said Peter Brown, founder of Canaccord Financial.

It is this understanding of the exploration industry that has cemented Vancouver's reputation as the start-up capital of the world and led to a string of successes. Canaccord Financial is one of the world's leading providers of the financial services and venture capital to the mining industry (just one among a range of industries it supports) and has grown from a Vancouver-based small-cap mining firm, into an international organization with 41 offices around the world, including a recently established presence in China. An acceptance of the cyclical nature of the mining industry has helped in this growth. "Canaccord Financial has a reputation of seeing our clients through the tough times. During the weak market of the late 1990s, for example, we kept up our relationships with all of our clients, kept them funded and afloat and when the markets turned around in 2003 we were there to support them in their success. We have never let a client run out of money," said Brown.

Even away from the financial companies themselves, however, a comprehension of the financial market permeates all levels of the industry. Baja Mining, for example, has gone through a turbulent time attempting to finance their Boleo copper project. "We were about to close the debt financing on August 1, 2008, with copper at US\$3.35/ lb, delayed for a month and when we came back on October 1st copper was US\$1.55 /lb," said John Greenslade, president and CEO of Baja Mining. However, their refinancing in 2009/2010 was so successful that it won them the 'Exploration and Development Funding Award' at the annual Mines and Money Awards dinner in 2010.

While Vancouver unquestionably understands exploration and is willing to take a punt on juniors, the city and its financiers only have so deep a set of pockets. With 1200 plus listed companies (and a multitude of private firms) there is also a lot of competition for capital. When an exploration company shifts to development mode, they will probably need to tap money south of the border.

"It is very difficult for retail investors in the U.S. to buy any Canadian equity. Even from an institutional point of view there are many institutions that cannot invest in a company which is not listed in the United States. The largest capital market in the world is about 20 km from Vancouver and you are not capable of accessing it with only a TSX listing. We recently listed Extorre in New York, now we are trading a third of our volume in the U.S. and I would expect in the next year it will overtake the Canadian trading volume," said Yale Simpson, co-chairman of Extorre Gold Mines and executive chairman of Exteter Resources Corp.

Simpson understands just how fickle the capital markets can be. "The Argentina assets (which now form the basis of Extorre) were not being given any value within Exeter as the company was so associated with its 26 million oz gold and six billion oz copper Caspiche discovery in Chile," he said.

In March 2010, Extorre spun out of Exeter and the daughter company is now worth more than twice as much on a market cap basis. "The Argentina assets were not being given significant value within Exeter but by spinning it out we unlocked several hundred million dollars of additional market capitalization for shareholders," Simpson said.



Inside the 1.4km long Wildhorse Adit at Duncastle Gold's Yankee-Dundee project near Trail, BC. (Photo courtesy of Manex Resource Group)



B2Gold operates two gold mines in Nicaragua, La Libertad mine and the Limon mine (pictured), with total estimated production of up to 140,000 oz of gold in 2011.

In times of economic uncertainty investors go to ground. Or, more accurately, to minerals that are taken from the ground. The fall of Lehman Brothers in 2008, marking the starting point of the recent global economic crisis, saw the prices of all precious metals begin the upward trajectory that they have maintained ever since. Lingering currency volatility, combined which recent unrest in the Middle East and the economic impact of the tragedy in Japan, the world's third largest economy, all suggest the continued strength of the precious metals market for the next few years.

### Gold

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The standard choice for investors looking to invest in metals of any type, precious or base, is gold. From the earliest use of gold as a currency in 610 BC, the value of the metal has always been well understood. With gold prices reaching an all-time high of US\$1,569 in April of this year, and no doubt exceeding that before this publication goes to print, there has been a surge of interest in gold projects around the world.

### **BRITISH COLUMBIA**

While this section looks to explore the international influence of Vancouver-based companies, it must be acknowledged that many of their projects start close to home. Gold, by production value, is the third most produced metal in British Columbia, after copper and molybdenum, accounting for 6% of Canada's total gold production in 2010. Half of British Columbia's ten metal mines produce gold, either as a primary or secondary product. The province, covered by the five belts of the Canadian Cordillero, provide familiarly scenic hunting ground for Vancouver's miners and explorers.

For the purposes of analysis, British Columbia is often divided into six regions; Omineca, Skeena, Northeast, Thompson-Okanagan-Cariboo, Coast and Kootenay-Boundary. While it would be convenient to say each of these represented a specific geological trend, the rather eclectic mix of gold deposits the province is blessed with means exceptions usually become the rule and these regions are more useful simply as geographical indicators.

The mines of the Omineca region, covering the majority of central British Columbia, are a good demonstration of this deposit diversity.

Northgate Minerals' Kemess South mine, which produced 100,789 oz of gold and 40.7 million lb of copper in 2010, is an example of the copper-gold porphyry system so common to British Columbia. Close by are the smaller Baker and Shasta mines of Sable Resources, both gold-silver vein systems.

The potential proven by these mines has attracted a host of juniors to the area. Equitas Resources' Day property is a coppergold porphyry system approximately 50 km south of the Kemess South mine, with historic drilling from the 1970s showing significant mineralization of almost three times the grade of Kemess South. In the southwest of the Omineca region lies the Capoose, 3Ts and Chuchi North projects of Silver Quest Resources. Originally one of the first companies to look for silver in the central British Columbia, drill results on the Capoose project rather diluted that focus by revealing significant gold mineralization. An updated resource estimate in 2010 revealed 1.7 million gold equivalent oz (55 million oz of silver and 830,000 oz of gold) and initial metallurgical tests show

a recovery rate of almost 90% for gold and 65% for silver.

Other companies, such as Troymet Exploration Corp., are diving into this potential and, in doing so, revealing the possibilities of further deposit types. Troymet Exploration's early stage Key project, for which they are awaiting drill results from their winter program, is prospective both for precious metals and for volcanic massive sulphide deposits. Adjoining this property is the Davidson-Blackwater project, a joint venture between Silver Quest Resources and Richfield Ventures that has recently announced combined inferred and indicated resources amounting to 4.2 million oz of gold.

A couple hundred km south of the Kemess South mine is the flagship property of Serengeti Resources Incorporated, the Kwanika project. At the northern end of a copper-gold porphyry belt called the Quesnel trough, the Kwanika property has a NI 43-101 compliant resource, which between its central and south zones contain approximately 1.8 million oz of gold and just short of 1.3 billion lb of copper, at a 0.25% copper equivalent cut off grade.

Following the Quesnel trough south, the Thompson-Okanagan-Cariboo region, which covers the south central area of the province, contains a further two of British Columbia's gold producing mines. Imperial Metals' Mount Polley mine, which produced just short of 50,000 oz of gold in 2010 (as well as approximately 33 million lb of copper and almost 100,000 oz of silver) is an open-pit operation based on a porphyry-related system typical of its location. With its planned mine-life currently extending until 2015, Imperial Metals nonetheless is attempting to maximize

the mine's potential. "Since reopening the mine in 2005, we have had continual exploration on the property. We currently have 3 diamond drills in operation with the focus to expand the reserves. We are developing an underground mine at the property, and have recently commissioned a circuit to recover magnetite from the tailings," said Brian Kynoch, president of Imperial Metals.

Barkerville Gold Mines' claims, despite being located less than 25 km away from Mount Polley, illustrate the geological diversity of the area. They encompass the QR mine, a propylite gold skarn deposit, the Cariboo Gold project's (Cow Mountain) quartz vein mineralization and the entirely new type of gold mineralization found at the Bonanza Ledge property. Barkerville Gold Mines' future plans for these areas are ambitious. "Barkerville is hoping to achieve production targets of 50,000 oz this year from the QR mine and we are looking to reach 65,000 oz for the second year," said Frank Callaghan, president and CEO of Barkerville Gold Mines. "By 2013, we are planning to upgrade our second mill, which is currently a 1360 mt/d facility, to 3000 mt/d. This will be fed by production from Cow Mountain (the Cariboo gold project), which we are still drilling and developing



Spanish Mountain Gold Ltd.'s COO, Ron Halas (center) discussing the exploration drill sites with the Williams Lake Indian Band Natural Resources coordinator (left) and manager (right).

the resource and we feel has the potential for an open-pit operation. Although we do not yet have a NI 43-101 resource on this deposit, from the drilling that had been completed between 1995 and 1998 there were two independent resource calculations done in 1999, which suggested a resource in the neighborhood of 11 million mt, equating to just over 1 million oz of gold. We are currently in the process of

recalculating that resource to make it NI 43-101 compliant."

The Quesnal trough, that both of these mines sit on, is one of the world's largest alkalic copper-gold porphyry belts, stretching for 1500 km through British Columbia. Both of the above mines are situated in the Cariboo region of this belt, which hosted the Cariboo Gold Rush, the most famous in British Columbia's history. Capital-



izing on the proven potential of the area, junior companies are exploring in the immediate vicinity of these two mines. Central Resources' TAM property, on which they are hoping to carry out trenching this year, shows similar altered geology to the QR mine site. The Spanish Mountain gold project, operated by the aptly named Spanish Mountain Gold, sits barely 20 km from both the Mount Polley mine and the QR mine. Unusually for British Columbia, this property holds a sediment-hosted gold deposit, one of the first recognized occurrences of this in British Columbia.

As is being found by many junior companies, Spanish Mountain Gold is finding that the increased price of gold is having a hugely beneficial effect on its future plans.

"We have done several years of exploration drilling and several resource estimates have been completed on the property. Following the completion of a positive Preliminary Economic Assessment (PEA) in November 2010, we are now looking at moving into the pre-feasibility and feasibility phase on the property during 2011. The basic scope of the project would be an open-pit, pure gold operation based on a 40,000 mt/d milling operation. Based on the existing resource contained within the proposed pit, it has the potential to pro-

duce in excess of 200,000 oz/y of gold for the first five years and a mine life of 10 years," said Brian Groves, president and CEO of Spanish Mountain Gold. "The practical realities are as long as the capital markets and commodity prices are supportive then we would like to go it alone. Our intent is to build it ourselves and I believe we have the expertise and desire to do it."

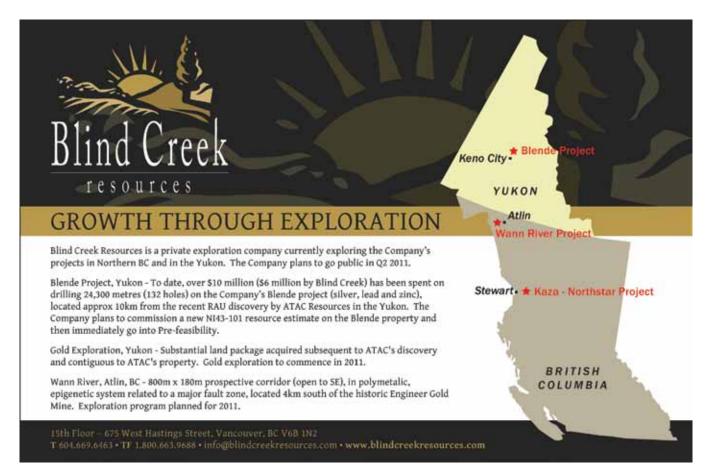
Located further south on the Quesnel trend, the Ajax project of Abacus Mining is a more conventional copper-gold porphyry system, of the type which contains 50% of the province's gold (British Columbia contains the majority of Canada's porphyry deposits).

Although primarily a copper deposit, with 75% of the revenue predicted to come from its copper production, it nonetheless has a significant gold credit, with estimated annual gold production of 99,400 oz. "We are on track to completing a feasibility study this fall and when complete, conditional on it being positive and bankable, KGHM has the option to purchase another 29%, taking their share to 80% and with Abacus Mining holding the remaining 20%. As part of that arrangement, KGHM is obliged to fund us right through to the production phase," said Jim Excell, CEO and president of Abacus Mining.

The remainder of the Thompson-Okanagan-Cariboo region, although outside the famous Quesnal trough, has nonetheless proved extremely profitable for gold exploration. The Prosperity project of Taseko Mines, initially denied a permit by the federal government after being passed on a provincial level, is located to the south of the belt. A copper-gold porphyry system, and with probable and proven reserves of 7.7 million oz of gold and 3.6 billion lb of copper, the federal government's issue with the project was its backfilling of a nearby lake.

Having adjusted their proposal and reapplied for the permit, Russell Hallbauer, president and CEO of Taskeo Mines, is confident that the project will now go ahead. "With copper prices now on the rise, we are now able to haul the waste rock to a more distant location with the project remaining at a positive net economic result. We at Taseko Mines are happy with this result, because although initially we would have preferred not to backfill this lake, we felt that the economic benefit our operation would bring to the region would outweigh the negative environmental impact. Under our new proposal, we are not forced to make this compromise."

To the south of Prosperity, the region also once hosted the Bralorne, King and Pi-









Bradford Cooke, chairman and CEO, Canarc Resource Corp.

oneer gold mines. Together, these historically produced 4.1 million oz of gold, supporting the region throughout the Great Depression. Today, Bralorne Gold Mines holds 490 hectares around the historic mines and has already made several significant new discoveries. "Bralorne has the potential to produce another 3.5 to four million oz of gold in the unexplored gaps between the historic mines," said Johnathon Smith, Business Development for Bralorne Gold Mines, with the company's drill results so far backing him up.

Also around this historic area lie the Minto, Olympic-Kelvin and Aumax properties of Avino Silver & Gold Mines. Although not currently a focus for the company, drilling on the Minto property in 2006 did yield some significant grades of gold mineralization over small areas.

On the other side of the Thompson-Okanagan-Cariboo region, 45 km due north of Revelstoke, is Huakan International Mining's flagship J&L project, a polymetallic massive sulphide deposit. Already one of the largest undeveloped deposits of its type in British Columbia, Paul Cowley, vice president at Huakan International Mining, sees potential for the company's second phase underground tunneling and drilling program to expand the resource further. "The project has very good expansion potential and will likely lead to a significant deposit; with further exploration it could double or triple in size. It is both precious metal and polymetallic, although the principle value metal is gold."

It is the Skeena region, covering the northwest of British Columbia, which is attracting the most attention. Home to the Yellowjacket mine of Eagle Plains Resources, the Skeena region attracted C\$172 million in exploration spending in 2010, or roughly half of the total for the province and C\$241.5 million in mine development expenditures. Much of that spending was devoted to finding gold.

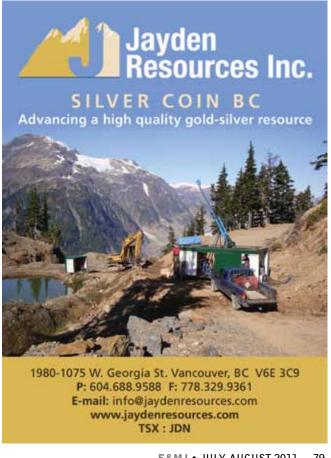
Perhaps one of the best examples of both the diversity and potential of the region, the adjacent Brucejack and Snowfield projects of Pretium are two of the most promising projects in British Columbia, with the latter being a porphyry-style deposit with gold-copper, molybdenum and rhenium mineralization and the former seeing its gold-silver mineralization occur in stockwork/breccia systems. Between them they contain a remarkable 34.1 million oz of gold in measured and indicated resource; 25.9 million oz at Snowfield and 8.2 million oz at Brucejack. The combined measured and indicated silver resource totals at just under 200 million oz. The strength of these projects has enabled Pretium to grow the company to a C\$850 million market capitalization since their inception last year.

Located in the same Atlin district as the Yellowjacket mine, BCGold's Engineer project is an epithermal gold vein property encompassing the historically producing Engineer mine, a high grade underground mine that reached its zenith in the 1920s. BCGold is

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currently having a NI 43-101 resource estimate put together, but emphasizes that this will not reflect the true potential of the area. "There are over 25 known veins on the property, only four of which have been looked at in any detail and only two of which have been mined," said Fowler. "Over the next year we will be carrying out airborne geophysical surveys, trenching and soil geochemistry sampling on the property in order to further define drill targets and attempt to get a better idea of the size and quality of the prospect."

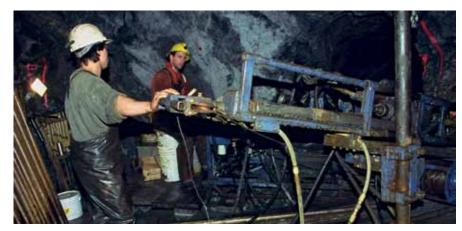
Blind Creek Resources, run by the same Frank Callaghan of Barkerville Gold Mines, has also sought to capitalize on this area's potential. Last summer a high grade trenching discovery on their Wann River project, only four km south of Engineer mine, revealed sampling up to 263 g/mt gold, 3010 g/mt silver and significant amounts of copper, lead and zinc.



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Further south is Canarc Resources' New Polaris gold project. Three major vein types contain a NI 43-101 compliant resource of just over 1 million oz of gold, with the potential for further exploration. "'Once we secure a Joint Venture partner for New Polaris, we plan to complete an 18 month program of new mine development (2500 m) in order to access the deposit by way of a spiral decline, drifts and raises. Drill stations will also be cut so that underground infill diamond drilling (10.000 m) can be completed. Final environmental base-line studies will be carried out and Canarc will enter into the mine permitting process during this time. Canarc will then undertake a six month program of bulk sampling and metallurgical testing to optimize gold recoveries and finalize the process flow sheet, and complete engineering and related studies needed to develop the mine plan, update the capital and operating costs, finalize a bankable feasibility study and secure the social licenses and government approvals to build the mine," said Bradford Cooke, chairman and CEO of Canarc Resources. "Add on a year for financing and construction and combined, these plans will put us on a three year time-frame to production."

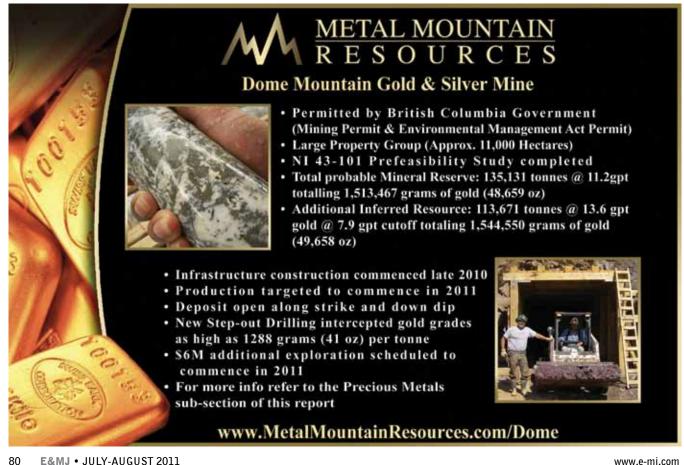
The Golden Eagle project of Troymet Exploration, also in the area of Atlin and



Minerals Drilling at New Polaris gold mine circa 1950. (Photo courtesy of Canarc Resource Corp.)

catching the tail end of the Tintina Gold Belt that has brought Yukon so much fame, has had several successful drill programs, but as of yet no resource estimate. The property has the potential to host several deposit types; intrusion related deposits with associated skarn deposits, high grade gold-silver veins and volcanogenic massive sulphide (VMS) deposits. A total of 13 mineralized zones have been identified on the property.

Clustered on the very edge of the Canadian border, a cluster of epithermal veins has given rise to a spurt of projects. Close to the town of Steward, Ascot Resources' Dilworth project is early stage yet shows signs of epithermal veins containing high grade gold and silver. Jayden Resources' Silver Coin project, situated in close proximity, is an epithermal vein project with geological similarities to the former Silbak-Premier mine, situated only three km away. During its intermittent life from 1918 to 1996 the Silbak-Premier mine produced approximately 1.8 million oz of gold, 41 million oz of silver, 4.2 million lb of copper, 62 million Ib of lead and 20 million Ib of zinc. "Jayden's plans for 2011 include a signifi-



cant drilling program, which is looking to advance the resource through both extensive infill drilling and exploration drilling on targets outside of the current resource," said Robert Felder, president of Jayden Resources. "The purpose of our infill drilling is to upgrade the resources from inferred to the measured and indicated categories and to build a comprehensive geological model. As we improve our understanding of the geologic and structural controls on mineralization, we can upgrade the resource, model the high grade zones with increased confidence, continue to add value to the project and bring it closer to production. Jayden's goal for this year's program is to advance the project to pre-feasibility stage by early 2012."

Further south in the Skeena region, this wealth of gold continues. The Dome Mountain project of Metal Mountain Resources, located near the town of Smithers, encompasses a 12 km northwest trend containing 12 gold and silver mineralized veins. The company is in the process of reopening the past-producing Dome Mountain gold and silver mine; in 2010 the project was issued mining and environmental act permits by the BC Government enabling the company to being production, targeted to commence in 2011. "On top of this work on the initial site, we have begun step out drilling on the broader area surrounding the mine, targeting geophysical/geochemical extension anomalies, which indicate excellent potential for further resources and continued mine development there. To give you an idea of how exciting this site is, we have been producing drilling results from this area with as much as 1200 g/mt gold, as well as more than 10 oz/mt silver. This has the makings of a world-class gold silver deposit," says Abel Tattersall, executive vice president of business development for Metal Mountain Resources.

Pacific Booker's Morrison project, fairly close by the Dome Mountain project, is a gold-copper-molybdenum porphyry deposit currently waiting on the approval of an environmental assessment application before proceeding with an open-pit mining and milling operation. "At Pacific Booker Minerals, we are confident that we will receive approval for the Morrison project, for the simple reason that there is no scientific reason why we should not. There are no fatal flaws associated with the project and if all goes according to plan the end goal will be a producing mine that has a limited environmental impact and a positive economic and socioeconomic impact," said Erik Tornquist, executive vice president and COO of Pacific Booker

Minerals. Echoing a challenge faced by the mining industry throughout the world, however, he adds "Unfortunately, we often have to deal with people's perceptions rather than science."

Outside of these three regions, the rest of British Columbia also holds prospects for gold discoveries. Mineral Mountain Resources' Kootenay Arc Gold project is located in the Kootenay-Boundary region in the southeast of the province, an area known for high grade silver and lead veins with variable concentrations of gold. Despite this, studies conducted by the British Columbia Geological Survey indicate that the Kootenay Arc project holds potential for sediment hosted gold mineralization; including possible Carlin style deposits. In order to prove this potential, Mineral Mountain Resources is pushing forward with a drill program this year, in line with the business philosophy of Nelson Baker, president and CEO of Mineral Mountain Resources. "We believe that investors like to see a very busy company, spending aggressive funds on drilling and putting money into the ground. Historical trends, surface sampling and other geochemistry and geophysical work is important, but really the only way you can establish whether you have an economic deposit is by drilling."

The coastal area of southern British Columbia, including the islands off the coast, is increasingly attracting gold exploration. Total exploration spending in this area has increased from C\$3.5 million in 2000 to C\$15 million in 2010. Taseko Mines' Harmony Gold project, for example, is on Graham Island and Western Copper's Island Copper copper-gold porphyry deposit is located on Vancouver Island. Despite the long history of gold mining in British Columbia, it appears that much potential still remains.

### **CANADIAN GOLD**

Despite the formidable strength of the mining industry all throughout Canada, the presence of Vancouver juniors in provinces and territories around the country, on a scale not reciprocated by juniors from other parts of Canada in British Columbia (British Columbian companies account for 80% of exploration spending in British Columbia), speaks volumes about the potency of Vancouver as an exploration capital. Not a single province or territory of the country has escaped thorough examination by Vancouver's explorers.

As can be expected, many of the most exciting of these projects are based in Yukon. The Rankla gold project of ATAC Resources, which we have already discussed



in our article on Yukon, promises to maintain the so far steady flow of good news with a NI 43-101 compliant resource being currently calculated for the Tiger Zone. "If this looks interesting," said Robert Carne, president of ATAC Resources, with an underplaying of expectations quite unusual for the industry, "then a preliminary economic evaluation may take place over the summer. We are doing metallurgical studies on the sulphide portion of the system and will be continuing with those. Of the other gold occurrences in this district, we have only conducted drilling on one other zone, the Cheetah zone. The remainder will have around 2000 m of drilling this year, with the focus being on the east end of the property and the Osiris discovery that we made last year where we will be drilling the bulk of the 40,000 m program."

Kaminak Gold's Coffee gold project, will also offer some potentially positive results in the coming year. "This year Kaminak will start a \$15 million phase one exploration program that will entail 40,000 m of diamond and RC drilling. Our objectives are to expand on the eight discoveries we made last year, work towards a NI 43-101 compliant resource and make new additional discoveries. Only 10% of Coffee has been systematically soil sampled so there is still a lot of blue sky potential," said Tony Reda, vice president of corporate development at Kaminak Gold.

It is perhaps some of the smaller projects in the territory, however, which offer the greatest prospects for investor return. The Hyland gold project, according to the president and CEO of Argus Metals, Michael Collins, essentially has the same geological model as that seen in ATAC Resources' recent gold discovery at its Rau gold project. Blind Creek Resources, although very few results have yet come out, managed to stake the Yukon Carlin gold project contiguous to ATAC Resources Rau discovery.

Argus Metals has increased its land position in Yukon from 40 square km last year to more than 500 square km this year and the coming months should reveal some indication of what this newly acquired land contains. "We have conducted a fair amount of work on this project, but so far these activities have been concentrated on the core area," said Collins. "We have only really looked at a small proportion of the area that we have, so while we will be starting a drilling program in this core area in June, we will also be running regional mapping and prospecting programs this year so we do not overlook potential deposits in the surrounding area."

Slightly more advanced, AM Gold's Red Mountain project, located in close proximity to ATAC Resources' operations, has already shown a very fast pace of development, having significantly increased its inferred gold resource last season. "We are very pleased by the results of our 2010 program and we intend to continue step-out drilling this summer in an effort to expand on what we have. In addition, we are excited to be in a position to test additional targets on the property this year, including mineralization discovered well to the north of the resource area by the last hole of the 2010 program. We're really just getting started on the exploration of the greater Red Mountain property and we're very optimistic about the potential for continued success," said Gerald Aberle, president and COO for AM Gold.

The probable next gold mine in Yukon, however, is often overlooked in the excitement surrounding the White Gold Area. A little outside sits the Dublin Gulch property, containing the advanced Eagle gold project. With 2,690,400 oz of indicated gold reserves, Victoria Gold is expecting a new economic assessment completed by the end of this year. Being (unusual for Yukon) road accessible with nearby hydroelectric power, Eagle Gold is now being pushed towards production.





Winter Drilling at Balmoral Resources' Fenelon project, Quebec.

"At the Eagle project Victoria Gold has just announced a new resource calculation," said John McConnell, president and CEO of Victoria Gold. "We are now at over six million oz from our combined indicated and inferred resources. About a year ago, we completed a pre-feasibility study that demonstrated that we had an economic mine with a gold price of US\$900/oz. With the subsequent increase in the resource and with gold prices nearing US\$1600/oz, the Eagle project is an excellent property and we are moving it forward to production. We started a feasibility study in December, submitted our environmental applications in December and both of those are going very well."

Also outside of the White Gold area lies the Klondike Kate group of properties of Pacific Ridge Exploration, which include the rapidly advancing Mariposa project. "Pacific Ridge Exploration is essentially basing its schedule on Underworld's White Gold discovery," said Brock. "From start to finish for them it took two years; exploration started in 2008 and they were bought out in 2010. This was really quite an aggressive schedule but seems to be achievable with these types of deposits. Kaminak, for example, had completed enough of their geochemical work and trenching in 2009 to define targets and start drilling in 2010. I believe their objective is to come up with some category of research in 2011. Pacific Ridge Exploration is approximately 18 months behind Kaminak in that exploration sequence."

On a similarly tight schedule is New Pacific's Tagish Lake gold project, a huge property with a NI 43-101 compliant resource of just over half a million gold oz on the areas that they have explored so far. Their focus to date has been on reinterpreting historical results from the property, which has resulted in their current concentration on the Goddell zone. They are looking to carry out up to 60,000 m of surface and underground drilling this year.

Outside of Yukon, the Vancouver-based major Aurizon Mines has chosen to focus its activities in Quebec. Its Casa Berardi mine, a high grade underground operation, has now entered its fifth year of production, with production hovering around 160,000 to 170,000 oz/y. Cash flow from this operation is being used to finance the continued development of the advanced stage Joanna gold project and a number of other exploration projects. Following this success, Balmoral Resources has focused its exploration activities in areas nearby to the Casa Berardi mine. The Fenelon project, in which Balmoral Resources has a right to acquire a 100% interest, shows an average gold grade of a remarkable 32 g/mt.

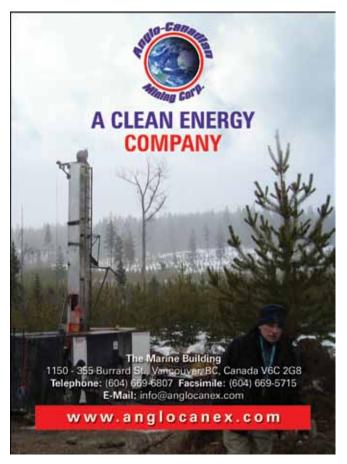
Balmoral Resources is looking to produce a NI 43-101 compliant resource late this year or early in the next. The company's other exploration projects, Detour Lake, N2 and Martiniere, are concentrated in the same region, showing the potential that Balmoral believes resides there.

"The gold deposits in the Abitibi region are controlled by major regional fault systems that extend for hundreds of km. The Martiniere project and Detour Lake sit on this same fault system. As such, we are seeing almost identical rocks and similar structures. We do not believe that Mother Nature plays political favorites, so there is no reason that there would be 20 million oz of gold in Ontario at Detour Lake and nothing of significance on the Quebec side. With Detour Lake becoming the largest gold deposit in Ontario, and second in Canada, it is attracting a tremendous amount of focus on that belt," said Darin Wagner, president and CEO of Balmoral Resources.

In Ontario, Mineral Mountain Resources received positive drill results earlier this year from their Shining Tree project, which is located in the same district as a number of substantial deposits; those of Kirkland Lake Gold, Timmins Gold and Northgate Minerals Corp., to name just a few.

"The Shining Tree project was selected by our technical team and myself due to its geological similarities to the Kirkland Lake gold deposit," said Nelson Baker.

"This whole area is an historically producing area and the sheer number and density of gold projects in it lower the risk of exploration. We have 145 square km in the region with a number of unexplored gold occurrences which we felt justified systematic exploration, so we felt our chances are quite good. We initiated a drill program in December 2010, received some positive results this year and we are very encouraged by our initial work."



### GOLD AROUND THE REST OF THE WORLD

Outside of Canada, Vancouver's gold explorers are developing projects everywhere, from developed Europe to the undulating landscape of West Africa. Astur Gold, for example, is developing one of the largest and highest grade undeveloped gold deposits in Western Europe. The Salave project, located in Spain, has over 1.6 million oz of gold in the measured and indicated category. Their La Corosera gold project, although not as advanced, is also located in Spain and has a similar ancient history, having been mined by the Romans 2000 years ago.

In Burkina Faso, Goldrush Resources holds eight properties including the NI 43-101 compliant Ronguen deposit, containing an inferred resource of 5.9 million mt at 1.3 g/mt gold. Although looking to expand, Len Brownlie, president and CEO of Goldrush Resources, is happy to stay in the region. "We are in an area where we would like to expand and have already looked at opportunities in Guyana, Ghana, Niger and Mali."

### **USA**

To start off with, however, many Vancouver companies are looking just across the border. Nevada, as could be expected, is

proving a happy hunting ground for many gold explorers.

Almaden Minerals holds three early stage exploration properties spread throughout Nevada and Columbus Gold and Victoria Gold are both operating in the state; both holding very large portfolios of properties. Victoria Gold's portfolio includes the Cove, Mill Canyon, Big Springs, Santa Fe, Relief Canyon and Jack Creek properties, four of which have historically producing mine sites on them.

Columbus Gold's portfolio exceeds even this, with 22 properties in Nevada (and a further one in Arizona). "We are looking to acquire as many properties as possible on which there is potential to find a resource. Subsequently, we will carry out first phase drilling on these properties, either by ourselves or in conjunction with a joint venture partner, drop those properties on which the drill programs are not successful and move on to a second phase drill program on those where we see promising results. This strategy results in a constantly evolving portfolio, where old properties are being let go and new ones coming in," explains Peter Kendrick, president of Columbus Gold Corporation. These properties are not, however, being accumulated without reason. Eight of these properties, for example, are located in the Battle Mountain Gold Trend, in which more than 100 million oz have been defined. Columbus Gold's Summit property starts a mere 1500 ft from the last drill of the Long Canyon gold deposit of Newmont Mining, in which 2.2 million oz have so far been announced. On their Bolo and Weepah properties, drill programs have already intersected gold mineralization.

In a less common jurisdiction for gold exploration, Revolution Resources are focused on their Champion Hills project in North Carolina. "Although very few people know this, North Carolina was host to the first American gold rush. The Nevada gold rush is more famous and there is a lot of literature surrounding the California gold rush, but Carolina experienced this well before either of those, in the late 18th century," said Aaron Keay, president and CEO. Moving into modern times, Revolution Resources intersected significant mineralization on their first drill program and now have seven or eight targets to explore further. "We are well capitalized, we have utilized that capital to secure additional land and we now have seven or eight new targets. Much of our land position has historic results and Hoover Hill and Silver Hill both had historic mines. Given this, we feel very confident of finding significant reserves in the trend," said Keay.



Minefinders is a precious metals mining and exploration company operating the multi-million ounce Dolores gold and silver mine in northern Mexico. Minefinders' goal is to increase its annual production in the next five years through increased efficiency, internal growth, focused exploration and strategic aquisitions.

TSX: MFL NYSE AMEX: MFN

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www.minefinders.com





Aerial photo of the camp at Kimber Resources' 100%-owned Monterde gold-silver project in Chihuahua, Mexico.

### **MEXICO**

Staying in North America, Mexico is a country of growing interest to Vancouver companies. One of the most successful juniors to operate there is Almaden Minerals, who over the past year have seen their stock price rise from C\$0.94 to its current level of C\$4.27. "The continuous growth Almaden Minerals has experienced over the past six months is down to drilling discoveries, primarily in our lxtaca property in Mexico. This is a previously unknown deposit, not listed on any governmental geological maps, but it is an area that we identified as permissive for mineral depos-

its. We had completed all the preliminary work and felt that we were ready to start drilling last year. Fortunately, we were correct in our assumptions and we hit a quartz vein system with significant gold and silver in it," said Poliquin.

Quaterra Resources is a company with significant experience in Mexico, with the president and CEO, Thomas Patton, being involved in the discovery of the Peñasquito deposit. In many ways, Quaterra Resources is now living the junior's dream in the country, with a strategic alliance with Goldcorp to explore the Faja de Plata region, where two of the world's largest silver

deposits have been discovered in the past ten years. This deal provides them with the funding and Goldcorp with the opportunity to buy into any property that is discovered. In addition to this, Quaterra Resources has an advanced property at the Nieves projects, where they have just finished a drilling program and have a 43-101 compliant resource with open-pit potential.

The Monterde project, the flagship property of Kimber Resources, is located in the Sierra Madre gold belt, the site of Goldcorp's El Sauzal open-pit gold mine, and currently contains an impressive three deposits with resource calculations, the most significant of which is the Carmen deposit. Although carrying out a drilling program this year to upgrade and enlarge the resource, Kimber Resources is already looking ahead to production. "[The Monterde project] is located in the Northern Sierra Madre gold-silver belt, which is a multi-million ounce producing belt," said Gordon Cummings, president and CEO of Kimber Resources. "In 2010. Kimber Resources issued an independent preliminary economic assessment on the basis of the high grade gold-silver resources at Carmen and Veta Minitas, which estimated over 60,000 oz of gold and 1.6 million oz of silver per year for 13.4 years. From this, we believe there is good poten-



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Greg Myers, CEO and president, Caza Gold Corp.

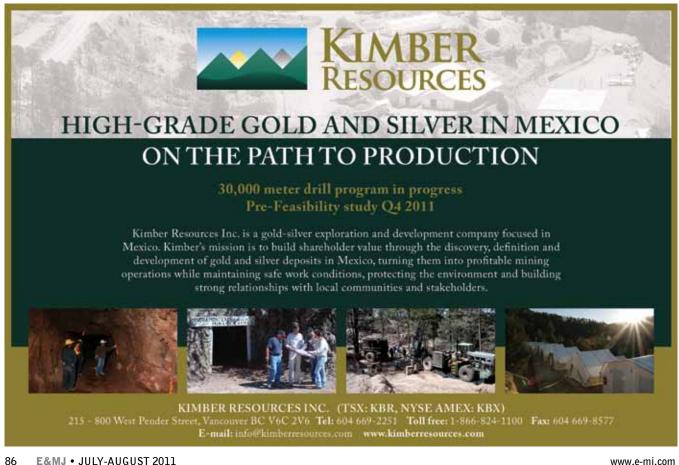
tial for Monterde to have a profitable, low cost producing mine. Kimber's plans for 2011 include the completion of a 30,000 meter drill program that began in January 2011. The objective of this drilling is to increase the measured and indicated goldsilver oz at the existing deposits as well as increasing inferred resource oz. In addition, we will be testing three new target zones to the north of Carmen and we are looking to complete a pre-feasibility study during the second half of 2011."

Kimber Resources, while prepared to take the Monterde project into production itself, is also willing to entertain the possibility of a joint venture or acquisition, other junior companies have shown a commitment to becoming producers. Caza Gold Corp.'s flagship Santiago project, a series of vein deposits assaying up to 145 g/mt, is currently undergoing its first drill program. Although still early stages, Caza Gold is determined to bring it into production as quickly as possible. "Caza Gold is looking at financing the Santiago project through to production by ourselves. With the current gold prices, even a production cost of C\$500/oz would still make any mine extremely profitable," said Greg Myers, president and CEO of Caza Gold. "The goal of Caza Gold is to be a producer and we are taking a very aggressive approach to achieve that. There is a large gap in the mining industry at the moment for mid-sized producers and we think that filling this gap will bring us many benefits. For a start, having a cash-flow will provide funding for further exploration activities."

Rapidly approaching the production stage, Geologix Explorations have recently completed a revised preliminary economic assessment on their Tepal project in Mexico, based on an updated resource calculation earlier this year. With the resource calculation increasing the size of the indicated resource by 131%, to 57.8 million mt containing gold equivalent oz of 1.7 million, and the inferred resource by 69%, to 93.2 million mt containing gold equivalent oz of 2.1 million, Geologix Explorations is now looking to start their pre-feasibility study and, from that, their permitting process.

What is unusual about the Tepal project is the low operating expenditure estimated by this preliminary economic assessment; a mere C\$358/oz. This is due to both the type of ore and the location of the project. "The ore at the Tepal project is very amenable to processing. It has a coarse initial grind size and the cleaners and roughers in the plant work very efficiently on it. It is also a clean ore, meaning that we do not have to deal with the impurities that usually go through smelters, and this provides us with a significant measure of cost-effectiveness," said Dunham Craig, president and CEO of Geologix Explorations. "Aside from these geological advantages, the infrastructure of the Tepal project is very good. We are located next to a town, providing us with a labor source and we have a power substation only 14 km away. It is one of the most natural sites that I have seen for building a mine, which boasts short-haul distances from pit to plant, to waste dumps. When you are moving 25,000 to 50,000 mt/d, it is all a pennies game; everything affects your bottom line."

Mining is a game of patience, and the



story of Minefinders Corp illustrates this well. "We commenced drilling on Dolores (Minefinders' flagship property in the north of Mexico) in 1996 and following more than 200,000 m of drilling and engineering design, we started building the open-pit heap leach mine in 2006," saidpresident and CEO, Mark Bailey. "Production started in late 2008, 12 years after making our initial discovery. We knew we had a viable property following our discovery drill hole in 1996, but between 1997 and 2001, during the difficult market period, where gold and silver dipped in price, we had to go slow in terms of developing the asset." The protracted development period has paid back big time for the Minefinders shareholders, who are now benefiting from record-breaking gold and silver prices. "It is almost as though we timed it perfectly, with gold and silver now selling at more than US\$1500 and US\$35 now that we are in full production. I would like to claim that was part of the strategy, but sometimes there is a bit of luck in this business as well as good exploration," said Bailey. Seeking to increase turnover and margin at Dolores further, Minefinders is embarking on a substantial investment campaign. They will build a C\$160 million mill. "This will make mining underground viable and will allow us to increase our capacity to



Loading ore to Phase 2 Leah Pad at Minefinders' Dolores mine.

process an additional 5000 to 6500 mt/d, shortening the mine life but increasing output. It will not only improve recovery of the higher-grade ore from the open-pit, which is important when you consider that within the 100 million mt open-pit deposit there are 20 million mt that contain half of the total in pit reserve. The addition of a mill will increase production which will also increase our time value of money," said Bailey.

Timmins Gold Corp. is perhaps the latest company to commence production in Mexico, having recently begun to churn out gold from their San Francisco property. Their route to this stage, however, was by no means usual. "The way most junior

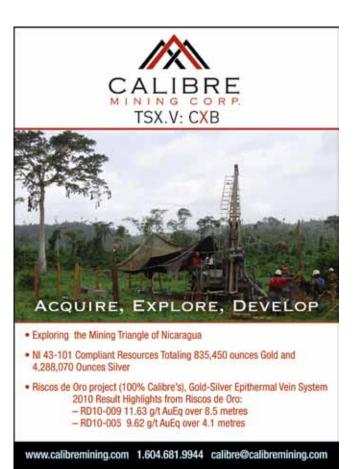
companies develop is to find a property, drill it and look to establish a resource that they can then put into production. Timmins Gold did not want to go that route. We saw it as taking too long and involving too much risk," said Bruce Bragagnolo, CEO of Timmins Gold Corporation. "About 10 years ago we realized that we were in a gold and silver cycle, that prices were going to increase and we wanted to take part in that. We therefore looked at buying the biggest resource we could and that turned out to be the San Francisco mine. At the time, in early 2005, the gold price was US\$425 /oz and essentially our purchase was a hedge on the price of gold."



#### **NICARAGUA**

Vancouver gold explorers have moved on to span the length of South America, from the Borosi concessions of Calibre Mining Corp. in Nicaragua to the Pinguino project of Argentex in the southern provinces of Argentina. Of these two extremes, it is Nicaragua that is currently enjoying a spurt of interest.

Calibre Mining's Borosi concessions include four camps covering 86,700 hectares of mining and exploration claims, a significant part of which is having its exploration funded by the major B2Gold, under an agreement whereby they can earn 51% of these properties. On the properties outside of this agreement, the Cerro Aeropuerto and La Luna deposits have a combined inferred resource total of just under 1 million gold equivalent oz and two historically producing mines are contained in the property. "The key thing about this area of Nicaragua is that it has not had any modern exploration. There has been sporadic exploration in the past 40 years, but the last systematic and disciplined program was conducted in the 1970s. Since then there has been a paradigm shift in geology, with a whole understanding of plate tectonics and deposit models and how they relate to each other evolving. This area has never been explored under that knowledge," said Robert Brown, president and CEO of Calibre Mining, explaining the appeal of the country. For Caza Gold, Nicaragua holds a similar level of excitement, despite their focus on the Santiago project in Mexico. "Caza Gold's most exciting property is the Los Andes project in Nicaragua," said Myers, for very similar reason to Brown. "The country contains a lot of gold, the government has opened up and changed their mining laws, it is very transparent and all this is combining to generate a lot of excitement in the mining industry. If you take Central America, there is a continuous band of ore deposits until you hit the Nicaraguan border. Then there is a big gap, despite the geology remaining constant. What is missing is exploration."





B2Gold's La Libertad mine in Nicaragua.

B2Gold, as fitting for a company of their size, is not content solely with their interest in Calibre Mining's Borosi concessions. Established by the executive team that built Bema Gold, eventually bought by Kinross Gold for US\$3.5 billion, they really started their impressive growth (increasing their share price almost tenfold in the past two years) with their purchase of the Limon mine and, at that time, partially constructed La Libertad mine in Nicaragua. With other assets in Nicaragua, Colombia, Costa Rica and Uruguay, Clive Johnson, president and CEO of B2Gold, is positive about the future. "Our objective is to become a half million ounce producer from our existing assets. If we are successful in increasing production at La Libertad and Limon, as well as fulfilling the potential of some of our other projects, that will give us a boost in the market and put us in a position where we can look at some selective acquisitions, either at an exploration level or with a project that can be brought into production very rapidly."

#### **ARGENTINA**

In the Patagonian province of Santa Cruz, Extorre Gold Mines Ltd. acquired a large portfolio of properties from Anglo Gold in 2003, when gold prices were in the doldrums. "This led to the discovery in 2007 of high grade gold-silver deposits at Cerro Moro, now our prime project," said Yale Simpson, co-chairman.

Argentina is a country with a poor reputation when it comes to property rights and perceived foreign investor risk. However, mining decisions are made at a provincial level and Simpson argues that Santa Cruz 'gets' mining. "They understand mining and there is no competing high value land use. In Santa Cruz Province they enjoy royalties from oil, gas, and mining; it is crucial to their economy," said Simpson. In fact, the experience has been overwhelmingly positive. "The permitting time ranges from six to twelve months, ours came in eight months. No jurisdiction in North America would turn around an application so quickly."

Cerro Morro has an NI43-101 resource of 1 million oz of gold equivalent. While not huge, the attraction for the investor lies in the economics and the rapid pace at which Extorre have been able to advance. The most recent feasibility study anticipates very low cash costs of \$200/oz. We would take those as being conservative. These are high grade veins. With these high grade veins the more intensively you drill the higher the grade goes up," said Simpson.

As it stands, Cerro Morro is shaping up to be a smallish 135,000 oz/y, high grade mine. However, exploration work continues. "We recently announced a new very high grade discovery called Zoe, right along trend of the Cerro Moro main vein. Zoe is a significant find – a game changer," said Simpson.

The political and bureaucratic establishment of Santa Cruz is used to dealing with new mine applications and familiar with the pros and cons of the industry. In Mendoza, more famous for its

The promise that Columbia Crest saw in Colombia (combined, to an extent, with the political risk that investors perceived in Bolivia) resulted in a change of focus from the company's San Simon project in Bolivia (which they still hold) to the Fredonia and Venecia gold projects in Colombia's prolific Middle Cauca Belt.

A good indication of the belief Colombia Crest have in their new properties, upon which preliminary geophysical and sampling work indicate a high probability of a large gold porphyry system, is the quality of the project that they are now demoting to secondary focus. "The Dona Amelia zone [on the San Simon project] already has an initial resource estimate which shows a reasonably sized deposit at an average grade of 5.5 g/mt. However, we are confident that this zone will grow in size. For a start, this resource estimate does not include a significant number of holes that were drilled on a 100 m pattern, utilizing instead solely those drilled on a 25 m pattern. We have already shown, therefore, the existence of gold mineralization outside of the resource estimate. This resource estimate also represents only one gold chute in a property that potentially holds up to ten. Given enough focus and finance, this deposit could enter production fairly quickly, with the created



Extorre Gold Mines is developing Argentina's next high grade gold-silver mine.

wine, the authorities are not so acquainted with mining.

Adding value for shareholders in such a situation becomes as much about community and political relations as prospecting and engineering. "There's a huge focus on the negative aspects of this business and that bias is our biggest hurdle," said Michael Philpot, executive vice president at Argentina and Chile focused Coro Mining Corp. "We needed to figure out if the people there even wanted mining to occur in their backyards before we started focusing on the engineering. So we've spent the last two years educating the public and working on our environmental aspects before completing the full feasibility study. We need to know how agriculture, community and mining can coexist. It's been a bit of a step back, but it will be worth it in the long run."

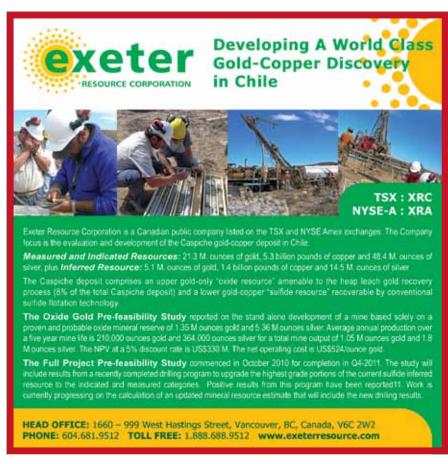
Coro own the copper-gold San Jorge project in Mendoza, containing a M&I sulphide resource of 2.15 billion lb copper and 1.44 million oz gold and a oxide resource of 0.42 billion lb of copper and 282,000 oz of gold.

"Our peer groups in Chile and Peru fully expect that once the permit is issued they can move forward and build. In Argentina we recognize that the path is a little less clear. Dealing with social and political issues and by demonstrating that the project can be a real benefit to the local people, and acting on the commitments we make, is where we add value. We stand out because we're willing to sit on this project and see it through. Ultimately, we'd love to have the opportunity to move it forward because then you can add more stakeholder value."

In recent months Coro have made considerable advances. "The Mendoza authorities have permitted the mine, though parliament has yet to ratify the decision. It's a bit of a waiting game, but we are confident that mining in Mendoza can take place," said Philpot.

#### **COLOMBIA**

In between the two extremes of Nicaragua and Argentina, arguably only one country is receiving the same consideration by Vancouver juniors. Colombia is a hot topic for miners of all minerals, but it is its gold potential that really inspires discussion in the boardrooms of Granville Street. "Colombia is where we see the future of the company, we expect to see significant discoveries there in the next five to ten years and we will be keeping our new name for quite some time," said Hans Rasmussen, president and CEO of the recently renamed Colombia Crest Gold Corp. (previously Eaglecrest Explorations).





# 3.7 million ounces gold 43-101

Four drills working to expand the resource

\$50 million strategic financing Electrum Group, Paulson & Co., Tocqueville Asset Mgmt

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real opportunity for Sunward Resources to start looking at other projects. Everything that is being done in Colombia now is brownfields. They are all projects that were known about previously and are now being expanded. There has been very little in the way of greenfield work done and there is tremendous opportunity in Colombia for that. So we would like to gather as much knowledge about the project we have as we can and then use that to explore the rest of the country. I expect there will be some phenomenal discoveries that are made as the sector matures."



Vancouver juniors are similarly active throughout South America. In Guyana Sacre-Coeur Minerals is focused on their flagship Million Mountain gold project. Further north in the country, the Eagle Mountain project of Stronghold Metals has a NI 43-101 resource and a lot more potential.

"At the moment the NI 43-101 resource, at a 0.5 cut off grade, is approximately 733,000 oz. Because one-third of the resource is saprolite, the project is economical even with these current figures. However, Stronghold Metals is quite confident that we can expand the resource to our target of 1.3 million oz. If we do



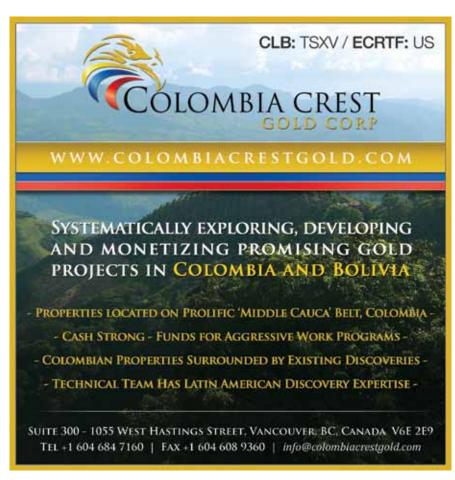
The town of Titiribi in Antioquia, Colombia was once one of the wealthiest areas in South America, having produced an estimated 3 million oz of gold. Photo courtesy of Sunward Resources.

revenue stream being used to expand the deposit," said Rasmussen.

B2Gold, its roots spread throughout the continent, has also seen the potential of Colombia. Alongside a copper-molybdenum porphyry property (the Mocoa project), they have also broken with their preferred operating style to obtain an interest in the Gramalote project. "B2Gold is in a joint venture on this property with Anglo-Gold Ashanti. AngloGold holds 51% and we hold 49%," said Johnson. "As a general rule we do not like to partner with big companies, who can sometimes be slower and face management changes. However, two things attracted us to this project. First, AngloGold is a good company and is doing everything very well. Second, the project itself is in a great location. We have remarkable infrastructure, a lot of local government support and none of the geographic problems that often affect Colombia: steep terrain, agriculture or altitude. If everything goes to plan production should start in 2014 and we are looking at potential production of 250,000 oz/y of gold."

Although historically a prolific producer, the drug trade and guerilla insurgencies that have plagued Colombia have kept most mining companies out until fairly recently. As a result, large parts of the country have only recently been exposed to modern exploration methods. Sunward Resources' Titiribi project, for example, has a well-documented history going back to the 18th Century. Since Sunward Resources acquired the property, they have completed a NI 43-101 inferred resource estimate of 3.7 million oz of gold and 460,000 mt of copper. This resource is hosted in the Cerro Vetas Zone, which the company is now using as a template to test six other zones with similar geophysics and geochemistry.

In the end, however, the ideal scenario is to replicate this use of knowledge on a much larger scale. "I would also like to see a real synthesis of the information that we gather, getting academics and researchers involved and really start to put together a comprehensive picture of the geology and the mineralizing systems in the country," said David Forest, COO of Sunward Resources. "This would be valuable for everybody working there and it would be a



find mineralization on the other side of the mountain, it will be a much larger resource. The concession is huge and the current defined deposit is only a small part of it," said president and CEO of Stronghold Metals Inc., Ioannis Tsitos. In order to expand their resource, Stronghold Metals is targeting another 15,000 m of drilling to move the project to the pre-feasibility stage by mid-2012.

Of course, the king of all Vancouver based gold explorers is Eldorado Gold. With operating gold mines in China (the White Mountain mine, the Jinfeng mine and the Tanjianshan mine) and Turkey (the Kisladag mine) and exploration projects in Brazil, Nevada, Greece, Turkey and China, Eldorado Gold is the producing epitome of Vancouver's leading role in the international gold community. Speaking with the benefit of 30 years experience, Paul Wright, president and CEO of Eldorado Gold, gives his opinion on the current exploration trends. "You have a marketplace in North America which is the biggest market place in the world for gold. It tends to take comfort in companies that operate in what are perceived as low political risk jurisdictions and this leads to a lot of junior activity in Canada, the United States, Central America and South

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Core samples from Stronghold Metals Inc.'s Eagle Mountain project.

America," he said. "These regions tend to be fairly mature districts. That is not to say that you cannot have success in these conventional jurisdictions, but the competition is very stiff," said Wright.

Some companies are looking to more unusual locations. Meritus Minerals acquired the Gutain Davaa gold project in Mongolia last year, a high grade quartz vein property with six gold prospects, one of which, the Toordogin Shul prospect, has been drilled with very positive results.

"There had been a limited number of works done by Troy Resources, but an

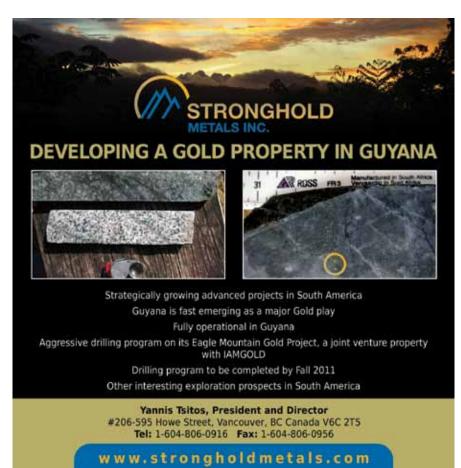
unusually high number of very high grade gold results. We have seen results as high as 500 grams per in surface sampling and up to 28.6m of 8.78 g/mt of gold in near-surface intercepts during our drill phase; these are remarkably high values that have occurred in both surface sampling and follow up drilling. In my experience, such values are very unique; these results were the key attractions for Meritus into this particular property," said Terry Bates, president and CEO of Meritus Minerals.

Columbus Gold, in addition to their plethora of projects in Nevada, have just acquired the Paul Isnard Concession, a NI 43-101 compliant resource of 1.9 million oz of gold, in French Guiana; a country where very few companies have been since Golden Star Resources were rejected a permit for their Cayman project.

"The acquisition of the Paul Isnard project is a change from the company's normal approach and certainly represents a shift in our strategy," said Peter Kendrick, president of Columbus Gold Corp.

"The reason for this is simply that the project was in the right place, at the right time, and we seized upon the opportunity. French Guiana is just beginning to return to the international mining community, after many years of being considered an unfriendly mining jurisdiction.... The government has put forward a map, detailing those places where they will allow mining and those places where they will not. Far from being an unfriendly mining jurisdiction therefore, we have a very clear guideline of what will be allowed and what will not, and the Paul Isnard project is in an area where mining is permitted. The country's reputation, however, has not yet disappeared and that has opened a window of opportunity for Columbus Gold."

Even in the more conventional jurisdictions, however, Vancouver gold companies are holding their own.





Robert Stroshein, P.Eng., at the discovery outcrop of Silver Range Resources' Keg property in the Faro District of southern Yukon

#### Silver

Silver is often referred to as the poor man's gold. Even today, blinded by the glitter of record gold prices, many do not realize that silver prices actually grew by a remarkable 35% in the first four months of this year, a rate of growth that far outstrips the 4% increase in gold prices over the same period.

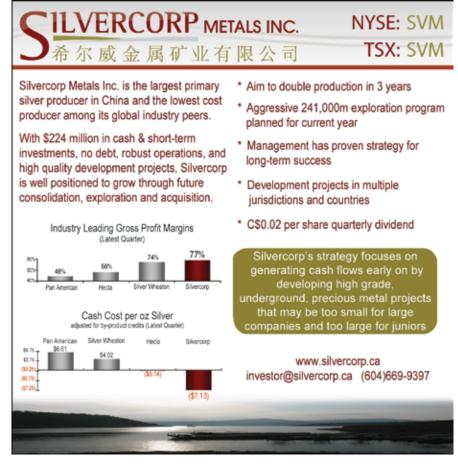
Silver, indeed, is arguably a better investment than gold. Although during the 1896 United States presidential election, when the term 'gold bug' was popularized, William McKinley supporters took the streets to protest against the 'silver menace', today gold is simply not affordable for your average retail investor. Increasingly, individual buyers are looking towards silver as their safe haven from an unstable US Dollar, weakening British Pound and crashing Euro. This demand has now reached the point where silver is experiencing the same market movement as gold, yet with worries about supply shortages.

Fortunately for the mining industry, they can have both. Silver is primarily found in conjunction with other metals of commercial value; copper, nickel, zinc or, in many cases, gold. For Vancouver companies operating in Canada and the United States, this latter combination appears to be found with unusual frequency.

Many of the projects discussed in the gold section of this article have secondary focuses on silver. The Silver Coin project of Jayden Resources, as mentioned above, is primarily a gold property but with silver potential good enough to clamor for attention. Many of the Manitoba based properties of Callinan Mines, certainly those characterized by quartz vein-type deposits (Island Lake and Gossan Hill), contain significant grades of silver in early gram samples and drilling. The Minto, Aumax, Eagle and Olympic Kelvin projects of Avino Silver & Gold Mines are all gold-silver systems, some with elements of indium or zinc.

There are, of course, many exceptions. The Silver Range project, currently owned by Strategic Metals, but soon to be spun off into a separate company (Silver Range Resources), is a silver-zinc-lead-copper deposit situated in south central Yukon. "Our objective is to find a large open-pit style silver-zinc-lead-copper deposit, something that could be mined at a large-scale more typically associated with copper porphyry deposits." said Doug Eaton, president and CEO of Strategic Metals. The Silver Range project, and indeed the company Silver Range Resources, have two major starting advan-

tages; the expertise of its parent company regarding the area and the infrastructure of the property. "The Anvil district, where the Silver Range project is located, was the site of Canada's largest open-pit zinc mine and as such there is a legacy of infrastructure in the area; port facilities, a complete town site, high capacity hydroelectric lines and a major bridge and airport. This will prove to be extremely helpful and beneficial both in the exploration stage and in the potential later development if our early programs are successful," said Bruce Youngman, chairman of Strategic Metals.



Silver Quest Resources, a company whose initial focus was to explore for silver in central British Columbia, have since been sidetracked by significant gold discoveries. Nonetheless, their Keno project in Yukon maintains silver as its primary focus, with the vein system also containing zinc and lead mineralization.

Despite these exceptions, it does appear that Vancouver silver companies are generally more amenable to abandoning their gold fetish once you move out of these jurisdictions. Silver Standard's Pirquitas mine in Argentina began commercial production in the last month of 2009 and at full production will supply 8 to 10 million oz of silver annually, with 2,500 mt/y of tin playing a supporting role. The Pitarrilla project, a grassroots discovery that Silver Standard has brought up to a completed feasibility report, contains 643.6 million oz of measured and indicated silver resources.

In Mexico, Silvermex Resources are currently working to resume production at the La Guitarra silver mine, which had modern production at an average of 277.5 g/mt between 1993 and 2003. The company holds another four silver properties in the country.

The Avino mine of Avino Silver & Gold



Silvercorp Metals Inc.'s Ying silver-lead-zinc mine, Henan Province, China.

Mines is, unusually, a silver focused operation despite the presence of gold in the vein system.

"We estimate that we will produce 1.1 million silver equivalent oz in the first year of production, along with roughly 890,000 oz of silver and 4500 oz of gold. We have the engineers and expertise required to produce full time. Ultimately we would like to be a multi-million ounce producer and once again run our mill at full capacity,"

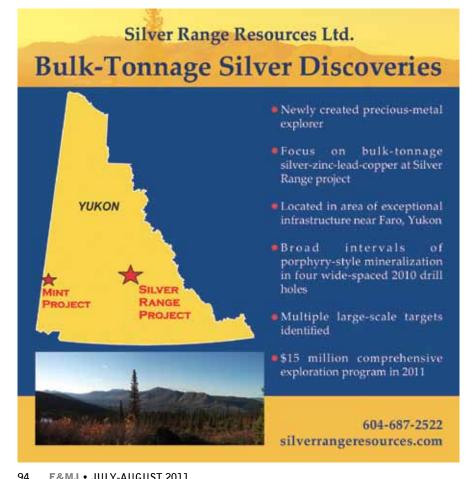
said David Wolfin, president and CEO of Avino Silver & Gold Mines.

Kimber Resources, mentioned previously for their Monterde gold project, also hold the silver prospective Pericones project in Mexico, which lies in an area well known for silver veins.

Venturing a little further afield, with a huge amount of success, is Silvercorp Metals Incorporated. Originally searching for gold in China, they soon found exciting amounts of silver and lead on the Ying project, now an operating mine upon which they can base their other operations. "Our Ying project now provides us with a consistent cash flow from which we can carry out further exploration activities. We spend C\$5 million to C\$10 million a year on exploration around the Ying Mining District, which is a much less risky option than spending that amount on greenfield projects," said Dr. Rui Feng, chairman and CEO of Silvercorp Metals Inc.

Silvercorp have also recently acquired another silver project in China; the GC silver-lead-zinc mine in the Guandong province, as well as the BYP gold-lead-zinc mine in the Hunan province. The choice of China is an unusual one. Vancouver companies, while present in the country, do not enjoy the same company of peers that they do in most other jurisdictions. However, as the success of Silvercorp shows, the country can be very profitable.

"Low labor costs were the key factor for Silvercorp when we made the decision to enter China," said Feng. "The type of mine that we built on the Ying project is labor intensive to move into production because it requires a very long and complex tunnel system. This cost Silvercorp only C\$6 million to do in China. In Canada, it would have cost us C\$300 million."





Entrée Gold currently has an extensive drill program under way at its properties in Yerington, Nevada. Pictured above is a diamond drill on the Ann Mason property.

The term 'base metal' is one that causes some dispute. In a definition surprisingly vague for the scientific community, the chemical definition of a base metal is one that 'oxidizes fairly easily'. In the financial community, base metals are those that are the non-precious metals trading on the London Stock Exchange. In the mining industry, the application of the term is often (but not always) limited to just non-ferrous metals.

There is, however, a large amount of overlap between these differing definitions. Copper, nickel, lead and zinc are all considered base metals under any definition you use and are therefore covered in this section. Iron, obviously excluded if you count base metals as just those that are non-ferrous, will similarly be included.

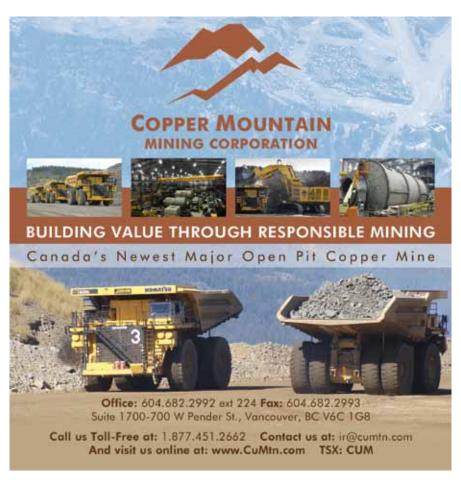
#### Copper

The name 'copper' comes from the Greek 'cyprium', the 'metal of cyprus': a reference to location in which it was originally mined. Copper mining has since spread throughout the world, with at least 49 countries today having operating copper mines. Despite the prevalence of the metal, demand is straining current supply, estimated to exceed it by 2100. The continued development and electrification of the global community, driven primarily by Asia, has seen copper prices increase by more than 50% in the past year. Perhaps unsurprisingly, given British Columbia's own copper production, Vancouver companies are the ones capitalizing on these prices.

#### **BRITISH COLUMBIA**

British Columbia itself still attracts a fair amount of exploration. The British Columbian Ministry of Energy, Mines and Petroleum Resources, in its MINFILE database, lists more than 6950 copper-bearing occurrences in the province and with the traditional dominance of Chilean production eroding, many of these are able to produce copper increasingly competitively. Jim O'Rourke, CEO of Copper Mountain, has seen the price of his company's shares steadily increase over the past year, driven entirely by the strength of the Copper Mountain project, a copper-gold porphyry. "Copper Mountain has a couple of drill holes under the planned pit that are around 0.6% cop-

per, which is encouraging. We are looking to mine grades of around 0.42% to 0.45%, which is still a lower-grade than many copper mines in Chile, but Copper Mountain's advantage is that we have an inexpensive water and power supply, plus an extremely clean concentrate with no contaminants. Our concentrate is an ideal blend product for the smelters. Also, many of the Chilean mines are three times the capital cost of Copper Mountain's mine."





Brian Kynoch, president, Imperial Metals Corp.

Calcalkalic and alkalic porphyry deposits provide the bulk of the province's copper production. Abacus Mining and Exploration Corp.'s Ajax property is a copper-gold porphyry system containing 442 million mt at an average grade of 0.4% copper and 0.19% gold. The Morrison property of Pacific Booker Minerals is a copper-gold porphyry current undergoing an environmental assessment review. Western Copper's Island project, still in the early exploration stage, is a gold-copper-molybdenum-rhenium porphyry.

The Kwanika project of Serengeti Resources is doubly rich in porphyry depos-

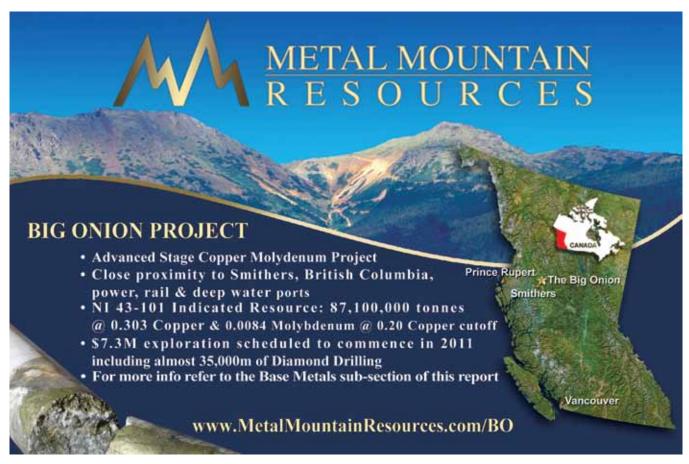
its. "Since initially staking the property we have discovered a copper-gold deposit, and an adjacent copper-silver-molybdenum deposit," said David Moore, president and CEO of Serengeti Resources. Concentrating on the Quesnel Trough, an area known for its porphyry systems, Serengeti Resources has benefited from early public surveys of the area. "The north-central Quesnel Trough was one of the first regions to be surveyed by Geoscience BC and this work generated significant opportunity for companies such as ours," said Moore.

Also leveraging off work done by Geoscience BC on the Quesnel Trough, and perhaps motivated by successful drill programs at their porphyry-based Sickle-Sofia and Voigtberg projects, BCGold has a generative exploration strategy aimed specifically at finding properties with the potential for porphyry copper-gold deposits. "In British Columbia, this approach has been made easier by the proactive initiatives of the government," said Brian Fowler, president and CEO. "In a program called the 'Quest South Project', the provincial government has flown gravity surveys over the southern part of British Columbia, as well as collecting and reanalyzing silt samples from different drainage points. In southern British Columbia, a region where the terrain is partially covered by heavy glacial drifts and young volcanic coverings, making mineralization hard to detect, this kind of public information saves a significant amount of time and money."

The strong performance of copper in recent years is driving Vancouver juniors to conduct grass roots exploration in southern BC. "Our key project right now is in Princeton, BC," said Len Harris, Anglo Canadian Mining Corp.'s president and CEO. "We have about 12,000 hectares on which we have identified two targets and have established a zone. We have also just completed a 3-D, IP magnetic survey over our drill hole targets and found some large, high chargeability targets on our property."

The Princeton project might be grass-roots, but Harris has been strategic in his acquisitions over the years. "We are right next door to the Copper Mountain mine," said Harris. He believes this proximity is positive from a geological perspective. "All of the copper deposits in Princeton are on a contact between the volcanics and an intrusive, like the Lost Horse intrusive that everyone believes brought in the copper to the area. Our core samples indicate the Lost Horse extends into our lands."

Beyond geological indicators, the proximity of Anglo Canadian's assets to an op-





Metal Mountain Resources' Big Onion project. Lloyd Tattersall, president, CEO and senior founder examines diamond drill core for chalcopyrite copper mineralization.

erating mine lend value. "We're sitting four km from a major mill and a major deposit. Copper Mountain's super pit is going to be seven km long and it won't stop at property boundaries," said Harris.

Not all porphyry deposits follow the standard copper-gold model however. One of Imperial Metal's earlier stage exploration projects, the Catface property, is situated on a copper-molybdenum porphyry. Metal Mountain Resources' delightfully named Big Onion project is similarly a copper-molybdenum porphyry deposit. "We have successfully outlined a NI 43-101 compliant indicated copper and molybdenum resource, which to date contains 87,100,000 mt at 0.303% copper and 0.0084% molybdenum at 0.20% copper cut off for a total of 581,900,000 lb of copper and 16,100,000 lb of molybdenum," said Abel Tattersall, executive vice president of business development, Metal Mountain Resources. "This is very exciting given the change in price of copper that has occurred in recent years."

These types of deposits lend themselves to bulk-tonnage open-pit mines, a tendency illustrated by Taseko's Gibraltar mine. An open-pit copper-molybdenum operation that produced 43.2 million lb of copper last year in the first half of 2010, the Gibraltar mine is set to increase its operations this year, as the Gibraltar Development Plan 3 (GDP3), set to commence construction in spring this year, is planned to boost production to 180 million lb. "A major part of the Gibraltar Development Plan 3 will be a new molybdenum recovery facility.

This will have more flotation capacity and therefore offer a better opportunity to recover molybdenum that we were unable to before. We believe that we shall be able to achieve a similar success with molybdenum to that we achieved with copper, and hopefully raise recovery rates to well above 50%," said Russell Hallbauer, president and CEO of Taseko Mines.

Both of Imperial Metal's mines, Mount Polley and Huckleberry, are of the same open-pit model (Mount Polley is also a copper-molybdenum porphyry system, although with quantities of gold and silver; Huckleberry is a copper-gold porphyry deposit). The company's Red Chris project follows the same template, a gold-copper porphyry deposit being quickly advanced to an open-pit operation. "The Red Chris project is an advanced stage project. Both the provincial government and the government of Canada have granted the project's environmental assessment certificates," said Brian Kynoch, president of Imperial Metals Corp. "We have been working for over a year to obtain permits to allow the start construction and we anticipate obtaining those permits by mid-year. The feasibility study estimates the mine development will take two years to complete, so we expect to be ready for production by early 2014."

It is worth, in the interests of accuracy, to mention that not all copper projects in British Columbia are of this porphyry model. The next most productive geologic deposit in the region is that of volcanic massive sulphides. The Harper Creek project of Yellowhead Mining, for instance, is





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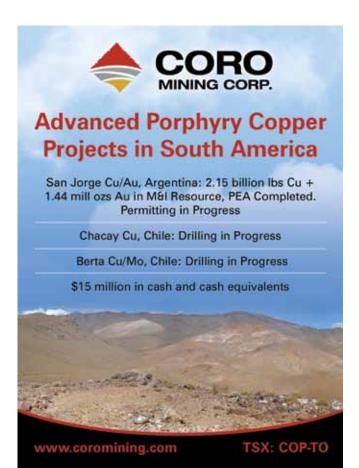
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Coro Mining's copper-gold San Jorge project in Mendoza.

a copper-silver-gold-zinc-molybdenum hosting a volcanic massive sulphide deposit.

"The Harper Creek deposit is not a porphyry-style system like most of British Columbia's copper mines. The ultimate goal is to have a 70,000 tonne/day operation, which will be an open-pit mine with large-scale equipment," said Ian Smith, CEO and director of Yellowhead Mining. "This year, we plan to go straight into the feasibility study in April, which will be supported by an extended drilling program. We will start a step-out program to look at expanding the resource. There will be an updated resource as part of the preliminary economic assessment that will bring into the resource calculation the significant gold and silver credits present, and moving on from there we would expect first production to be in the fourth quarter of 2014."



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Quaterra Resources Inc.'s Yerington copper project located in Lyon County, Nevada.

## COPPER AROUND THE REST OF THE WORLD

Outside the borders of British Columbia, junior companies are taking their expertise in copper to all corners of the world, starting with their neighboring provinces. The rest of Canada has a significant amount of copper hidden under its empty northern regions in a range of deposit types; skarn-type ore bodies, mineralized veins and volcanic massive sulphide deposits all compete almost equally for the attention of explorers.

In Yukon, for example, the Fyre Lake project of Pacific Ridge Exploration hosts 'Besshi-type' copper-cobalt-gold volcanic massive sulphide mineralization at the Kona deposit. This year, the company is looking to rerun its economic assessment on the property in an attempt to lower the copper cut off grade. "The object of this is to see whether we will be able to lower the copper cut off grade, which at the moment stands at 1%, and in doing so increase the resource size. It is also important to note that there is still exploration potential on the property; the deposit is still wide open to deeper drilling, for example," said Pacific Ridge Exploration's president and CEO, John Brock.

The properties that Western Copper holds in Yukon provide a good idea of the range of ore types. Their Redstone project, currently at an early stage exploration, is a sediment hosted stratiform deposit. Their Carmacks project, currently waiting on its construction permits, is characterized by copper-bearing quartz veins, and their Casino project, looking to start production in 2015, is a gold-copper-molybdenum porphyry.

The Gregory River property in Newfoundland, owned by Playfair Mining, demonstrates two types of copper deposit; a high grade copper volcanic massive sulphide deposit and high grade copper lodes and quartz veins. Their Seal Lake copper-silver project, also at an early exploration stage, shows a third; sediment hosted mineralization.

The multiple copper claims of Callinan Mines in the Flin Flon region of Manitoba are also based on a porphyry-related system. Callinan Mines identified these prospects, especially the promising War Baby claim, by working backwards from known mineralization.

"The War Baby claim is well located to follow on from the success of the Callinan mine and 777 mine. The polymetallic mineralization of the region, which was discovered with the Callinan mine and got closer to the source with the 777 mine, appears to plunge towards the War Baby claim. What this means is that any potential deposit would be located at quite some depth; a fact that has been confirmed by intersects that we have drilled, which are at over 1700 m below surface. These intersects demonstrate significant quantities of copper at grades sufficient to



Gregory Crowe, director, president and CEO, Entrée Gold Inc.



Mike Muzylowski, president and CEO, Callinan Mines Ltd

make the property very exciting, despite the difficulties caused by the depth," said Mike Muzylowski.

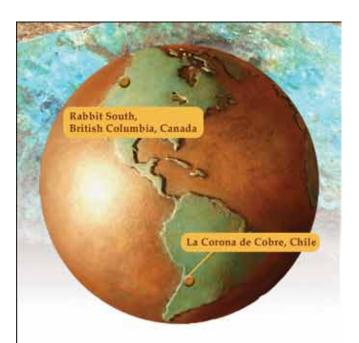
Moving across the border, Quaterra Resources hold a portfolio of copper projects in the United States that stretch from SW Tintic in Utah to Peg Leg in Arizona and to the Duke Island project in Alaska (which holds platinum group metal credits among its copper and nickel mineralization). Their major asset though is the MacArthur project in Nevada. "The MacArthur project is a large copper oxide property that Quaterra Resources acquired in 2007. Since then, we have drilled 120,000 ft and completed two NI 43-101 reports on the property, showing a combined indicated and inferred resource of 385 million mt at a grade of 1.2%. Currently, we are drilling large core samples to provide material for heap leaching tests and drilling deeper holes in an attempt to find the source of the copper, as we believe there is a primary grade copper source," said Thomas Patton, president and CEO of Quaterra Resources.

Quaterra Resources has also just acquired the further land in the Yerington area with their acquisition of Arimetco's assets. These include 4.2 square miles of patented claims and fee mineral properties centered on the former Anaconda open-pit copper mine. This has a historic resource estimate in excess of 4 billion lb of copper. Combined with the company's MacArthur project, this gives the company a dominant land position in the district.

Entrée Gold has a similar sizeable portfolio. Even when focusing solely on their Untied States copper assets, there remains a list of seven properties spread over Arizona and Nevada. Chief among these, and the secondary focus for Entrée Gold after their properties in Mongolia, are the properties in the Yerington district of Nevada. A historically producing copper porphyry district, Entrée Gold had to make an effort to consolidate the land claim that they current have. "The Yerington district has not had any majors working on it and over time property ownership had become fragmented. Entrée Gold did a number of deals, including acquiring the Ann Mason inferred resource of over 7.1 billion lb of copper, and we now have one of the largest ground positions in the Yerington camp," said Gregory Crowe, president and CEO of Entrée Gold. "Our goal is to outline the current resource by the end of the year and, if warranted, proceed to a pre-feasibility stage. We aim to define a copper oxide resource at Blue Hill, do infill drilling to upgrade the resource at Ann Mason and do step-out drilling to see whether we can extend the sulphide mineralization. We have deepened the known mineralized zone to 325 m below the previous resource outline and the last 50 m of the hole were in mineralization that exceeded 0.6% copper equivalent."

One of the most interesting projects is that of Ascot Resources, who hold the Mt. Margaret property in the state of Washington.





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Since acquiring the property in 2010, Ascot Resources have been continually delayed by the state's rules and regulations. However, with a belief in both the potential of the property, which attracted significant attention and historical work until the eruption of Mt. St. Helens in 1980, and the ability of state legislature to eventually sort itself out, Ascot Resources has persisted. Just this year, drill results intersected almost half a kilometer of 0.459% copper on the property; results that anybody would be willing to wait for.

Rick Kasum, operations manager for Ascot Resources, explains the sheer scale and the challenges of the Mt. Margaret project. "When Ascot Resources purchased Mt. Margaret we knew that the deposit was there. It was not a question of whether we had a large enough deposit, but rather the political battle that we were going to have to deal with. However, we are abiding by all the rules and regulations. Our operations have a very low environmental impact and we have a great relationship with the Forest Service and we are confident we will get the necessary permits. This project would also be a huge economic boon to the local area. The molybdenum and silver credits alone would pay for the entirety of the mining, leaving billions of Ib of copper and significant amounts of gold solely for profit."

The Vancouver copper community also stretches down to Mexico, completing the cities dominance of its own continent. The polymetallic Boleo property of Baja Mining, for example, which contains copper, cobalt, lead and zinc in flat lying soft rock ore beds, is one of the more eclectic properties in the country. The company is current constructing a mine that will produce 84 million lb of copper, 3.6 million lb of cobalt and 65 million lb/y of zinc and will start this production in 2013.

With typical Vancouver technical expertise, Baja Mining is pushing forward with the Boleo project despite it being a clay-hosted de-



Earthmoving activities at Baja Mining's Boleo site

posit, something that worries many mining companies. Having successfully completed a metallurgical pilot plant and a seven-month test mining period. "Since 1995, when the technology for dealing with clay-hosted deposits was introduced, there are now 22 mines in operation that use this technology. All of them have worked at or above the design capacity. For example, the best comparison to the Boleo project is the Sepon Copper mine in Laos, not necessarily because of its mineralogy or size, but because it demonstrates exactly the same settling characteristics to Boleo. The Sepon mine has now been in production for over five years and it has always operated at or above design capacity," said John Greenslade, president and CEO of Baja Mining.

Although not as numerous as their gold exploring cousins, Vancouver copper explorers have almost the same reach in South America, stretching from the Borosi concessions of Calibre Mining in Nicaragua, where the company sees potential for skarns and associated porphyry gold and copper mineralization, to the Copaquire project of International PBX Ventures in Central Chile, which contains three large porphyry systems. This property sits in the Chilean coastal belt, a porphyry belt containing deposits and prospects with

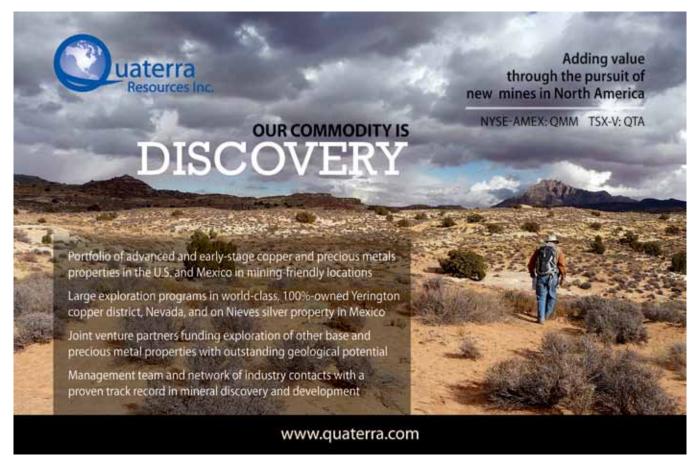


Over 30,000 metres of drill core is stored at Sunward Resources' new core shacks at the Titiribi project, Antioquia, Colombia.

the largest concentration of copper in the world. The other properties held by International PBX Ventures – the Sierra Pintada, Palo Negro-Hornito, Tierra de Oro and Tabaco properties – stretch even lower down the continent. Between these, certain countries seem to attract the attention of Vancouver juniors. Colombia is currently the hot topic in the conference rooms of Vancouver. Sunward Resources, Colombian Mines and Batero Gold Corp. have all found that their porphyry gold targets (the Titiribi, Yarmumalito and Batero-Quinchia projects respectively) contain significant

copper mineralization as well. In addition, Colombian Mines has several different types of deposit, with their El Dovio property hosting volcanic massive sulphide deposits of gold-silver-copper-zinc mineralization. Their Cerro de Cobra property contains high grade copper and silver mineralization in brecciated carbonate sediments.

In Peru, AM Gold's Pinaya project, also a copper-gold porphyry, holds the potential for a bulk-tonnage open-pit mine. "AM Gold has invested more than C\$15 million in Pinaya over the years and we already have published resource estimates. At the







Baja Mining's operations team reviews project plans for the Boleo site.

same time, less than 2% of the total Pinaya land package has been explored to this point and there is yet the opportunity for multiple discoveries on the property," said Gerald Aberle, president and COO of AM Gold.

In Chile, the La Corona de Cobre project of Global Hunter has an existing NI 43-101 compliant resource of 225 million Ib of copper with a huge amount of potential remaining in the property. "The existing resource sits on the original shear zone, yet the property has at least 15 other shear zones with similar mineralogy that have had various degrees of local mining on them, but have never been drilled," said Rod Husband, president and CEO of Global Hunter. "We are currently moving the Las Posadas Shear zone to the pre-feasibility stage, which will take six to nine months, and at the same time drilling the numerous drill targets on four other shear zones we have identified."

Indeed, Chile remains the world's largest producer of copper, accounting for over a third of total global supply. Its reserves continue to attract both junior exploration companies and the major players in the industry. Vancouver's behemoth, Teck, has made full use of these reserves, with two operating mines in the country. The Quebrada Blanca and Carmen de Andacollo mines had a combined production of 121,000 mt of copper in 2010. Despite operating copper mines in British Columbia (Highland Valley), Newfoundland (Duck Pond) and a 22.5% interest in the Antamina copper mine in Peru, it is the Chilean assets that arguably hold the most promise for growth. The recent extension of Carmen de Andacolla's mine life by approximately 20 years and the acquisition in 2008 of the Relincho project (which holds 3.2 million mt of copper in indicated resource) are a couple of the reasons prompting Doug Horswill, senior vice president of sustainability and external affairs of Teck, to say "at this point Teck's copper growth is mainly in Chile."

While Vancouver's copper companies to tend to concentrate in the Americas, it would be a mistake to believe that this was their sole focus of operations. Vancouver companies have copper properties in more than 100 countries around the world. Empire Mining Corp., for example, intersected a copper-molybdenum porphyry system this year at their Bursa property in Turkey, in grades and quantities high enough to justify a rebranding of the company from chromite-focused to copper-gold-chromite focused. "The previous focus of Empire Mining had been on our Bulqiza chromites project in Albania, however as part of our exploration program we were also carrying out work in Turkey, on our Bursa property. Initially this took the form of a very conservative drill program; 1000 m over four holes with one drill rig. However, the results of this drill program reported a very significant discovery and with this news we decided to embark on a far more aggressive drill program. We have expanded our drilling, aiming now for 10,000 m in our second phase and utilizing two additional drill rigs that can reach greater depths," said Jorge Martinez, vice president of corporate development. "This is obviously very exciting news for the company and we are now starting to reestablish ourselves not only as chromites focused, but as a copper-goldchromites company."

Empire Mining's two properties in the oft-forgot Serbia; the Nevlje property and the Kursumlija property, are also copper targets, increasing the company's strength in this new focus. The former is a coppergold porphyry system and the latter con-



Traditional Mongolian nomadic dwelling on the Entrée Gold's Shivee exploration camp.



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tains copper-bearing veins. Both are at an early exploration stage.

More than perhaps anyone else, Entrée Gold epitomizes the global copper interests of Vancouver. Entrée Gold's portfolio in the United States has already been discussed. In addition to these properties, however, the arguably incorrectly named company also has three copper properties in Australia, one in Peru and its primary focus in Mongolia. "Entrée Gold has two main corporate focuses; the first of these is in Mongolia, where the company acquired its first property in 2002," said Gregory Crowe, president and CEO. "We have developed our properties there and have a joint venture partner for the main portion of Lookout Hill which surrounds the Oyu Tolgoi mining complex. It is on this joint ventured ground that Entrée's major resources have been outlined. The remainder of Shivee West, which is 100% owned by Entrée Gold, is where we have focused our work over the past three years."

The Oyu Tolgoi mining complex is currently being operated by Oyu Tolgoi LLC, a partnership between Rio Tinto and Ivanhoe Mines. With almost 20 billion lb of indicated and inferred resources of copper split between the Heruga and Hugo North Extension portions of the land package and the Shivee West claim, owned 100% by Entrée Gold and currently being explored for copper-gold porphyry targets by Entrée Gold, showing significantly higher grades from initial drilling, Entrée Gold provides a perfect example Vancouver juniors leading the global copper industry.

#### Iron and Chromium

The gleaming skyscrapers that are rising towards the clouds in cities from Beijing to Dubai are dependent on a mineral taken from far lower. Similar to copper, the demand for iron is being driven by Asia and South America and the numerous construction projects that dot the landscapes and cityscapes of these countries. The scale of these projects is often breathtakingly immense. The Burj Khalifa in Dubai, the tallest building in the world, cost US\$1.5 billion and used 35,700 mt of steel.

Providing such huge quantities of iron is difficult. Iron projects require significant infrastructure and involve huge capital costs. Nonetheless, exploration costs are not significantly different than those of any other mineral and a number of exciting projects are currently underway. The distribution of iron projects is somewhat different from the standard model so far demonstrated by Vancouver companies; that of dominating North and South America before stretching further around the world.

Conscious of the infrastructure needs of a producing iron mine, there tends to be more exploration activity in more developed parts of the world and a shunning of the remoteness that most explorers thrive on.

In Canada the majority of iron ore production comes from Newfoundland and Labrador, small provinces with relatively developed infrastructure and easy access to seaports. Alderon Resource Corp. holds their Kami property next to the mining towns of Wabush, Labrador City, and Fermont in Western Labrador. Surrounded by



Mark Morabito, president and CEO, Alderon Resource Corp.

four producing mines, the Kami property is guaranteed infrastructure support, being in close proximity to railway as well as deep sea ports. Indeed, further development looks all but guaranteed, with Alderon Resource Corporation completing 25,749 m of drilling last year and a NI 43-101 compliant resource of 490 million mt indicated at 30% iron.

"Alderon is a company focused on a single project, the Kami property, which is focused on a single commodity, iron ore. We are not looking for other projects, instead we are focusing solely on developing Kami and taking it to production. Currently, our plan is to commence commercial production with a pilot program in 2014, which is an aggressive timeline, however we have more favorable conditions then when Consolidated Thompson Iron Mines achieved a similar objective. Given our access to rail, road, power and deep sea ports there is no reason to doubt that we will be able to achieve this," said Mark Morabito, president and CEO of Alderon Resource Corporation.

Even moving down into Central and South America, this tendency still exists. Cardero Resource Corporation, soon to add the complementary coal operations of Coalhunter to its collection, holds properties in Mexico, Peru and Argentina. In Peru, its Pampa el Toro Proiect is an iron sands project situated near the city of Nazca and 45 km away from the Port of San Juan.

Chromium, the other key ingredient in stainless steel, is considered by the United States Geological Survey to be 'one of the nation's most important strategic and critical materials'. Recognizing this importance, Empire Mining, at their Bulqiza project in Albania, a country that does not tend to generate much excitement in the mining community, is steadily developing their mine. "Albania was historically an extremely important producer of chromites.



Core shack at Alderon's Kami Iron Ore property in Western Labrador, Canada.



Point Noire, Quebec, Canada









### POISED FOR GROWTH

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4 port options which all provide year round access to global market

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#### Initial NI 43-101 Resource Estimate

490 million tonnes indicated at 30.0% iron and 118 million tonnes inferred at 30.3% iron.

#### Goal of the 2011 exploration program

Complete 30,000m of drilling in order to upgrade and significantly increase the current resource to between 800 million to 1 billion tonnes at grades between 28 to 32% iron\*

Carry out additional metallurgical test work

Complete a Scoping Study and updated Resource Estimate

Ed Lyons, P. Geo., the Chief Geologist for Alderon, is the Qualified Person responsible for technical content. Additional information can be found in the NI 43-101 Technical Report on Alderon's website and on SEDAR.

\* The potential tonnage and grade are conceptual in nature, there has been insufficient exploration to define an increased mineral resource and it is uncertain if further exploration will delineate an increased mineral resource. These updated resource figures are reported as exploration targets based on the presence of step-out mineralized drill holes, known mineralized zones open along strike and geophysically anomalous areas from data received by Alderon.

Alderon Resource Corp TSX.V: ADV OTCOX: ALDFF www.alderonmining.com info@alderonmining.com

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A Teck Resources' employee takes flow measurements from the Ikalukruk River, located in the NANA region of Northwestern Alaska, near the Red Dog zinc mine.

The only reason this has changed is the political situation over the years. When the Soviet Union collapsed, production in Albania declined and many of the projects and mines that were in the country were abandoned. Today, there is more stability in the jurisdiction and with this stability we are seeing production begin to increase once again," said Jorge Martinez, vice president of corporate development for Empire Mining.

#### Zinc

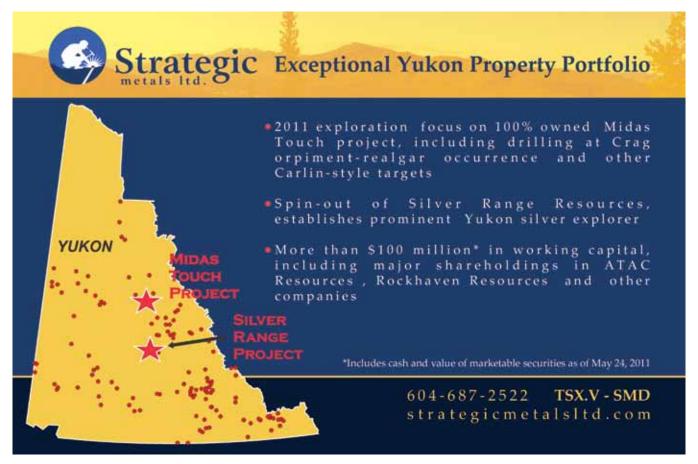
The Greek historian Strabo bitterly referred to zinc in the fourth century as 'drops of false silver'. You can understand his disappointment. Where silver currently trades at US\$46 an ounce, zinc is a mere US\$1.20 a pound. Where silver prices have enjoyed an almost uninterrupted increase for the past year, zinc has erratically swung around the US\$1.05/lb mark for the past six months. Nonetheless, that six-month

average is higher than it has been for four years and the continued demand for zinc shows no signs of abating, leaving zinc as a relatively safe investment.

The overwhelming majority of zinc in the world is mined in conjunction with other minerals. Vancouver companies do not buck that trend. Blind Creek Resources, for example holds significant amounts of zinc at its Blende project in Yukon; historic resources of 15.3 million mt at 3.04% zinc and 4.3 million mt of 3.05% zinc. Yet the project also contains silver and lead, arguably in quantities that would make silver the primary focus.

Troymet Resources has elements of zinc in its polymetallic Eagle Creek project and the early stage Key project, both in British Columbia. Arguably the company's McClarty Lake project in Manitoba could become a zinc-focused deposit, although it is still in the grassroots exploration stage. In fact, zinc is so widely dispersed through the earth's crust that a huge proportion of polymetallic deposits contain in it some quantity.

The J&L project of Huakan International Mining, one of the largest undeveloped polymetallic deposits in British Columbia, is no exception. Neither is the Boleo project of Baja Mining in Mexico, which plans to



produce 55.8 million lb of zinc in the first five years of mining, alongside 125 million lb of copper and 3.7 million lb of cobalt.

Teck is one of the world's largest producers of zinc, capable of producing 645,000 mt of zinc in concentrates, and 278,000 mt of refined zinc, ever year. While the Antamina mine in Peru, in which Teck holds a 22.5% interest, is yet another example of zinc as a secondary product (albeit in very substantial quantities), Teck also hold two operating zinc-lead mines; Red Dog in Alaska and Trail in British Columbia. The Pend Oreille zinc-lead mine in Washington ceased operations in 2009, although is anticipated to resume production in the future.

One of the few companies out of Vancouver to truly focus on zinc in its own right is Selwyn Resources. The company's Selwyn project in Yukon is the second largest undeveloped deposit of zinc and lead in the world. When you factor in the additional exploration potential that the company believes the property still holds, it could be the largest undeveloped zinc and lead deposit in the world, by quite some distance. Eager to secure cash-flow for the further development of this deposit, Selwyn Resources has recently acquired the ScoZinc project in Nova Scotia, a historically producing zinc mine that Selwyn Resources plans to reopen.

#### **Bauxite**

As the most abundant metal in the earth's surface, aluminum is too common to generally generate much excitement. The low profit margins provided by bauxite, aluminum's most common source, mean that this mineral tends to be ignored by all but the biggest of companies, who can afford to produce on a massive scale. Nonetheless, aluminum is worth including in this report for the simple reason that, yet again, it is a Vancouver company that is bucking this trend. First Bauxite, a company with four projects in Guyana including the flagship Bonasika and Waratilla properties, is looking to mine bauxite not for aluminum manufacture, but for its lesser-known applications.

"Approximately 95% of all bauxite becomes aluminum through a process of refining and a safeguard process of smelting. Profit margins are low and the amounts of bauxite required are in millions of mt. You therefore do not tend to see juniors in the metallurgical bauxite business because they simply do not have the infrastructure capacity. A mere 5% of world bauxite, however, which is normally of higher alumina grade, is used for other applications.



First Bauxite's cores from Bonasika 6 at Upper Waratilla Cartwright.

This can be used in many forms and applications, from illustrated paper to refractory production," said loannis Tsitos, president and director of First Bauxite Corporation.

The refractory grade calcined bauxite that First Bauxite will be producing will be a small step to weakening the stranglehold that China currently has on the market; a phenomenon that will be brought up again in the article on strategic and critical metals. Here, as there, it is Vancouver compa-

nies who are taking a leading role in providing alternative supply sources. "Nearly all (97%) of refractory bauxite is produced by Chinese companies," said Tsitos. "This oligopoly has had various effects, including an increase in price dynamics, inconsistency of supply, and substitutes. First Bauxite will be the first North American company to produce refractory bauxite and as such hope to diversify the supply base and fill a void that we see in the market."





Formation Metals Inc.'s Idaho cobalt project mill and concentrator facilities rendering, expected to be in operation by the second quarter of 2012.

Although the terms 'strategic' and 'critical' are becoming increasingly prevalent in the conversations of miners, geologists and politicians, these terms are still loosely defined. There is no commonly accepted list of minerals that are considered strategic, no list of those considered critical, and no clear answer as to whether these two terms even refer to different lists. With no definition supplied by science or classifications on the London Metal Exchange, inclusion in this exclusive and often elusive list is determined by two factors: the importance of the mineral for particular industries and the susceptibility of supplies of these minerals to disruptions.

The list of 'critical raw materials for the European Union', released in July last year by the European Commission for Enterprise and Industry, included 14 minerals or mineral groups: antimony, beryllium, cobalt, fluorspar, gallium, germanium, graphite, indium, magnesium, niobium, platinum group metals, rare earth elements, tantalum and tungsten. The parliamentary enquiry into 'strategically important metals' in the UK assumes that the British list corresponds closely to the metals in the European Union's list. The United States list, put together amid calls for a federal stockpile of said metals and minerals, includes molybdenum, vanadium, manganese, lithium, niobium, cobalt, tantalum, tungsten and indium.

The section will focus on a selection of these metals. Zinc, lead, silver and other more common metals that are on occasion termed as strategic due to their limited role in the defense industry, have been dealt with in other sections and will not be repeated. Rare earth elements, a staple feature of strategic and critical minerals lists, will be dealt with in a separate article.

#### Molybdenum

Molybdenum gained its name from a mistake. Its ores were confused with lead ores and so it was named from the Greek molybdos', meaning lead.

This lack of knowledge to some extent is being eroded only today, with the essential role of molybdenum in high-strength steel alloys only resulting in significant increases in molybdenum prices in the past decade.

Even recently the molybdenum market is rather opaque, with a relative lack of understanding of the metal compounded by the difficulty of tracking molybdenum prices. "Different sources will give you different prices and many rarely correspond with reality," said Warren Robb, COO of TTM Resources.

The general trend that we are sure of, however, is that a sharp rise in price in 2004 was followed by an even sharper crash in 2008, with molybdenum prices plummeting by approximately 80%. Since the second quarter of 2009, however, there has been a tangible increase in price.

Still far short of their pre-crash highs, molybdenum is nonetheless rising, pulled along primarily by steel demand in India and China. A number of companies, banking on the continued growth of this market, are searching for deposits worldwide.

As mentioned in our discussion of the Vancouver-led copper industry, molybdenum often occurs as a secondary product in projects primarily focused on other minerals.

Entrée Gold, for example, holds significant molybdenum reserves, but all of them in conjunction with other minerals. The Heruga portion of their Mongolian assets has elevated molybdenum content, as do two of their Yerington claims (Ann Mason

and Blue Hills) and one of their Australian properties (Blue Hills).

In British Columbia, which contains an abundance of porphyry-type deposits, molybdenum similarly plays the role of beneficial byproduct. Serengeti Resources' Kwanika property, Pacific Booker's Morrison property and Imperial Metals' Catface property are all porphyry projects with molybdenum mineralization significant enough to be an economic byproduct.

Global Hunter's Rabbit South property is, in this respect, guite unique. "We do have copper occurrences at the Rabbit South property, but essentially it is a standalone molybdenum deposit," said Ron Husband, president and CEO of Global Hunter. "Most of the big copper porphyry deposits have a component of molybdenum, but to have a standalone molybdenum deposit is quite unusual, although not unheard of. The disadvantage of them is that they need to be of quite a high grade to ensure that they are economical. What attracted Global Hunter to the Rabbit South project was its location. We are close enough to the Highland Valley copper mine so that we could utilize their facilities once their mine life ends."

With molybdenum prices recovering from their disastrous crash in 2008, companies are realizing that this byproduct is an increasingly important benefit to the economics of their projects. This growing focus on molybdenum has already been illustrated by our discussion of Taseko Mines' development plans for the Gibraltar mine.

In Metal Mountains' Big Onion project, molybdenum has been given almost equal weight to the copper in the company's future plans. A large, bulk-tonnage coppermolybdenum porphyry deposit located in

"One of the key milestones was in early 2009 when Geodex conducted a positive preliminary economic assessment. This was done when the general economic climate, and particularly the mining industry, was very weak, and we did it to determine whether Sisson was in fact a robust project that could be moved forward, even in economically difficult times. The positive results demonstrated that was one of those metal projects that would make money at all points in the metal cycles and convinced us to continue forward with further development work," said Mark Fields, president and CEO of Geodex Minerals.

Playfair Mining's 2008 discovery at their Granite Lake project opened up an area of Newfoundland that molybdenum explorers previously had little luck in. The discovery was significant, with one hole intercepting 184.4 m at a grade of 0.05% molybdenum disulfide.

Also in Newfoundland Creston Moly Corp.'s Moly Brook project was originally discovered when exploring for gold. It now has a NI 43-101 indicated resource of 124.6 million lb of molybdenum and an inferred resource of 38.6 million lb of molybdenum. Creston Moly's other Canadian property is more in line with the status quo, being located in British Columbia. The Ajax



El Creston molybdenum deposit. Photo courtesy of Creston Moly Corp.

northwest British Columbia, the property currently contains 581.9 million lb of copper and 16.1 million lb of molybdenum, with the potential for further expansion.

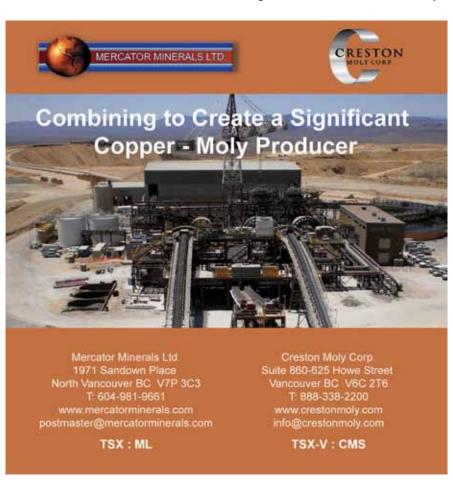
"Our expectations are that we will be able to significantly expand the Big Onion property's resource base from where it presently stands. We are undertaking a C\$7.2 million exploration program to complete step out and additional infill drilling, metallurgical, IP, environmental base line studies and a preliminary assessment to pre-feasibility study," said Lloyd Tattersal, president and CEO of Metal Mountain Resources.

Other companies have chosen to focus solely on molybdenum. The Storie Molybdenum deposit in northwest British Columbia is, unusually, a porphyry deposit focused solely on molybdenum operated by Columbia Yukon Explorations.

TTM Resources hold three properties (the Chu, Terrace and Deeker Creek projects) in British Columbia, all of which are molybdenum focused. The most advanced of these, the Chu project, is currently undergoing work to update its preliminary assessment, which was initially published in 2008. "Since then we have revealed a new and increased resource base, outlining combined measure and indicated categories of potential ore just short of 570 million mt representing an average grade of 0.05% and a cut off grade of 0.03% for molybdenum. Adding to that a cut off grade of 0.035% for copper and this ore calculation roughly translates at 600 million lb of molybdenum and 400 million lb of copper," said Robb.

In other parts of Canada, Vancouver companies are trying to break the strangle-hold that their home province has on the nation's molybdenum production. Geodex

Minerals, although not exclusively focused on molybdenum, nonetheless have some of the most significant molybdenum assets of any Vancouver company in New Brunswick. Their Sisson project is a tungsten-molybdenum deposit currently joint ventured with Northcliffe Exploration of the Hunter Dickinson Group, upon which Geodex Minerals completed a positive economic assessment.





# Tungsten in New Brunswick, Canada



Sisson tungstenmolybdenum project: feasibility study, **Environmental Impact** Assessment & permitting in process.

Northcliff Resources, of Hunter Dickinson Inc. earning joint venture interest by spending \$17m.

Scheelite (tungsten) in Sisson drill core: Plain light and under UV light



GEODEX MINERALS LTD.

Vancouver Head Office: Tel: (604) 689-7771 Toll Free: (888) 999-3500 info@geodexminerals.com www.geodexminerals.com project is one of the largest undeveloped molybdenum deposits in North America and, as a project abandoned by NewMont in 1996 due to the lack of potential they saw in molybdenum at the time, a good example of the opportunities available to those willing to wade into the murky world of the molybdenum market.

Moving out of Canada, Vancouver juniors are spread throughout the world. Creston Moly has had great success searching for this uncommon metal in the common mining destination of Mexico.

The El Creston property had been a potential molybdenum target for over 70 years before Creston Moly acquired it in 2007 and justified the long historical interest with a NI 43-101 compliant resource estimate.

"Our current work and focus has been on the El Creston deposit in Mexico, which is Mexico's largest undeveloped porphyry molybdenum deposit," said Bruce McLeod, president and CEO of Creston Moly. "The immediate milestone is to complete a feasibility study in the latter half of 2011, which is following up on a pre-feasibility study that was produced in 2009 and an updated economic analysis based on the updated resource estimate delivered in December 2010."

The Copaquire project of International PBX Ventures contains significant molybdenum (and even rhenium) mineralization alongside its copper resource. Empire Mining Corporation's Bursa project in Turkey, the site of the recent discovery discussed in our article on copper, also showed significant molybdenum mineralization in the last drill program, especially on the KDH-009 hole.

NMC Resources provides what is perhaps the best example of the willingness Vancouver juniors have to bet on market trends. The NMC Moland mine in South Korea commenced production in 2010, following a development history best characterized by sheer stubbornness. "We started the development of our molybdenum asset in South Korea in April 2008," said Do Hyung Kim, executive vice president of NMC Resources.

"When the global market crashed, at a time when the mining industry was closing mines, reducing production or putting plans on hold, we pushed very hard to develop it faster. The simple motivation behind this was a belief the market would rebound and a desire to be able to start production when it did. By the time we started production, molybdenum prices were back up and we were making money."



Global Hunter's deposit of 225 million lb of recoverable oxide copper is near the surface with further copper sulphides at depth. The Chilean property, La Corona De Cobre, is located on the Atacama Fault Zone.

Again unsurprisingly, in the Sisson and Mount Pleasant projects this tungsten comes in conjunction with molybdenum. North American Tungsten, the western world's largest producer of tungsten concentrate, hold their producing Cantung mine and their advanced stage Mactung deposit in the Northwest Territories and Yukon respectively.

"Both the rare earth and critical metal

"Both the rare earth and critical metal categories of minerals are of growing importance in the world; an increase that can be attributed not only industrial need, but also to geopolitical trends." However not all is easy for tungsten explorers seeking finance.

"This interest is still in its infancy. The education aspect of tungsten and critical metals is something Geodex has been doing for years and, although people are becoming more comfortable with the concept and learning more about it, we still find that we are required to provide far more of an explanation than if we were involved, for example, in a gold or copper project," said Fields.

Despite this, the market is generally optimistic about the future of tungsten. "The current increase in tungsten price is going to stimulate production and exploration in the tungsten field. There will be new deals



North American Tungsten Corp. Ltd.'s Mactung site under development.

#### Tunasten

In many respects, tungsten is similar to molybdenum. Quite apart from their comparable chemical properties, the two metals are often found together in porphyry systems and are both used in a variety of highstrength steel alloys. It is tungsten's role in the armaments industry, however, that gains it inclusion in most lists of strategic metals. Not to attribute too much violence to it, however, it is also worth noting that tungsten performs a variety of functions in the electronics industry and even in jewelry.

"Over the past three decades there has been a significant change in the geo-political dynamics of tungsten, whereby China has dominated global production to the tune of 84%, selling at very low prices thus providing no incentive for other regions of the world to either explore for, or produce tungsten. Over the course of the past five years however, China has banned the export of tungsten concentrate thus galvanizing a significant upside on price and demand for diversified supply lines from established consumers outside of China," said Stephen Leahy, chairman and CEO of North American Tungsten.

For the simple reason illustrated above, tungsten prices have been rising, most noticeably since September last year. Due to this junior companies are keen to find alternative sources in stable jurisdictions, which would allow them to capitalize on a market that is expected to remain bullish for the next few years. This tendency is illustrated by the distribution of Vancouver's tungsten explorers, who are primarily searching within the borders of their own country. Canada certainly fits the criteria of a stable jurisdiction. It also is one of only six countries to contain significant amounts of the metal (the others are Australia, Spain, Brazil, Kazakhstan and China), which is famously hard to find,

tending to be located at great depths within massive intrusive geological formations.

Playfair Mining, for instance, holds its four tungsten properties (the Grey River, Risby, Lened and Clea properties) in Newfoundland, Yukon and the Northwest Territories. Its Granite Lake Molybdenum project in Newfoundland, unsurprisingly, contains geochemical anomalies of Tungsten. The Sisson, Nashwaak, Flume Ridge and Mount Pleasant properties of Geodex Minerals are all contained within New Brunswick.



that could help us get our Grey River project into production. In the past few years, China has increased quotas, decreased quotas and now put restrictions on foreigners participating in their domestic tungsten industry. This uncertainty, combined with the tungsten deficit that is expected a mere two years from now will serve to push up prices," said Donald Moore, chairman and CEO of Playfair Mining.

Playfair Mining holds just short of 130 million lb of tungsten oxide ( $WO_3$ ) in a combination of NI 43-101 compliant inferred resources and non-compliant historical inferred reserves. The most notable portion of that comes from the Risby project, an advanced stage skarn-hosted deposit which has 89.4 million lb of  $WO_3$ .

Already taking advantage of the rising prices is North American Tungsten Corporation. Their Catung mine, located in the Northwest Territories, has experienced a stop-start history but is now operating and has the ability to produce four percent of the current world demand.

The Mactung deposit, according to Stephen Leahy, represents the world's largest commercially viable deposit of tungsten, with a NI 43-101 compliant indicated resource of 33 million mt of 0.88% WO<sub>3</sub>.

Despite this uncharacteristic preference

in the tungsten arena to remain in their own country, it is impossible to completely stifle the wanderlust of Vancouver explorers.

EMC Metals do have a NI 43-101 compliant tungsten resource at their Fostung project in Ontario, but have also ventured outside the nation's borders. The Springer project and the confusingly named Copper King project are both tungsten properties based in Nevada.

"The Springer Tungsten mine is the most advanced project in our portfolio, being almost fully permitted. We have a tungsten facility onsite that was built in 1981 and can be put back in production within 12 months. This is the only advanced stage (and historically producing) tungsten mine in the U.S. We have this asset currently for sale on the market, and it has clearly increased in value due to a sharply rising tungsten price. However, the rising fortunes of tungsten also bring other options to the table for EMC Metals; the project is clearly economic and very appealing to take into production at today's tungsten prices," said George Putnam, president and CEO of EMC Metals Corporation.

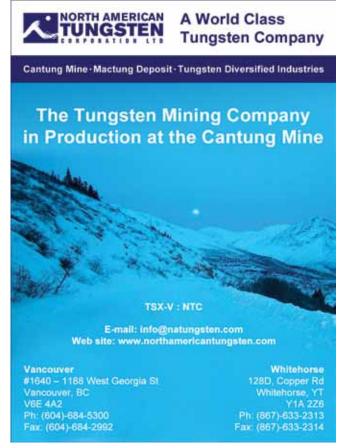
There is, admits Stephen Leahy, chairman and CEO of North American Tungsten, a certain element of pride in the role Vancouver companies are playing to provide

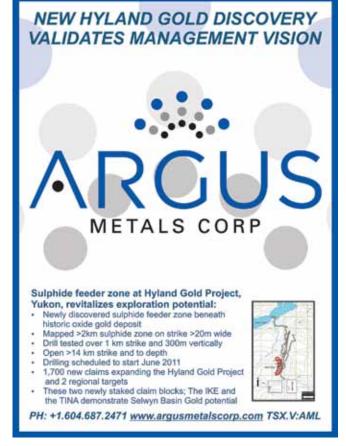
a counterweight to China's production of strategic metals. "Canadian mining globally has taken on a much larger role than it has in the past. Canada has now developed a worldwide significant presence, and is working hard to ensure sustained provision of vital mineral resources to the global market."

#### Cobalt, Lithium and Vanadium

Cobalt, lithium and vanadium are very different metals. Vanadium is named after the Norse goddess of beauty, cobalt after evil goblins and lithium, breaking with the mythological theme, after stone. The use of cobalt has evolved from creating pretty blue patterns on ceramics and coloring glass to being a vital ingredient of super alloys, while the primary use of vanadium has remained as a steel additive for almost 100 years. Lithium, in contrast to single-industry dominated uses of cobalt and vanadium, is fairly evenly consumed between its many applications.

What connects all of these metals, and what elevates them to the list of strategic and critical metals, is their role in the growing green movement. The price of cobalt over the past 30 years can be characterized, if any trends at all can be drawn from it, by erratic fluctuations. Vanadium does not trade on the open market, with prices







Mari-Ann Green, chairman and CEO, Formation Metals Inc.



Western Lithium USA Corp. is developing its Nevada Lithium deposit to support the new generation of hybrid/electric vehicles

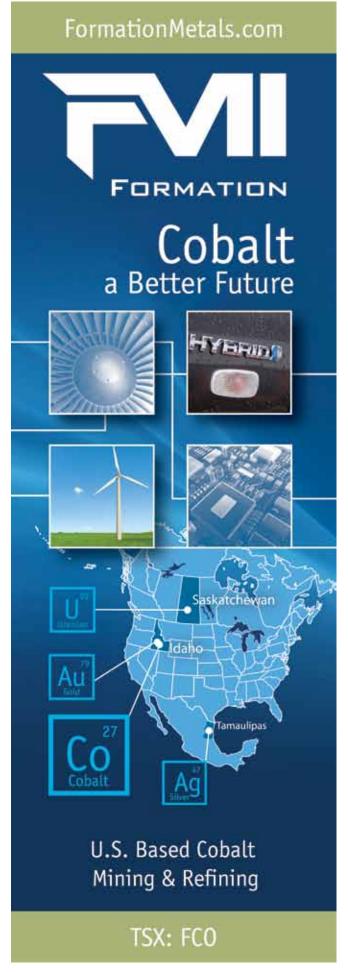
instead being negotiated privately. At the best estimates of market consultants, vanadium prices have risen fitfully since the economic crisis, with two major peaks settling at the end of last year to a price of US\$30/kg. The potential stabilizing factor in both of these markets could be the advent of environmental awareness. Cobalt's function in lithium ion batteries promises a stable and growing market of electric cars. The growing use of Vanadium in batteries opens up the same market.

Ideally, producers of both cobalt and vanadium will hope to emulate the success that lithium is already starting to see. First used as an anode for batteries in the closing years of the last century, lithium remains the primary component in the most common and commercially viable battery in use today and, as such, the price of a metric ton of lithium has increased threefold in the past decade. With current global production of lithium around 23,000 mt/y and demand expected, according to some scenarios, to increase to 120,000 mt by 2020, these prices can be expected to continue their rise for the foreseeable future.

In the lithium arena, a Vancouver junior is responsible for one of the markets most exciting projects. Keenly aware of the current market trends, Western Lithium is pushing to get their Kings Valley project, the fifth largest known lithium deposit in the world, into production by 2014. "The strategy of Western Lithium is to progress in the King's Valley in parallel with the wider growth of the lithium battery market. In particular, the adoption of lithium batteries for electric cars, which has already happened, and the adoption of electric cars by the general public, which we expect to happen, will create a huge demand for our product. Policy movements, in both Asia and the West, and issues such as rising oil prices, will also provide further impetus to this market," said Jay Chmelauskas, president and director of Western Lithium Corp.

Anticipating cobalt prices to start their upward trajectory in the near future, Vancouver companies are eager to get their properties into production. The relatively low cost of cobalt production means that these companies are often eschewing the standard junior strategy of finding a senior partner and instead pushing forward themselves. The aptly named Global Cobalt (formerly Puget Ventures) has interests both at home in Canada and across the ocean in Mongolia and Russia. The Werner West project, the company's flagship property in Ontario, promises to be Canada's newest producing cobalt mine.

Formation Metals, holding the Idaho Cobalt project (located, incidentally, in Idaho), is another advanced stage project. With production estimates of 1525 mt/y of super-alloy grade high purity cobalt metal over a minimum 10-year mine life (equivalent to 2% of the overall world consumption and 10% super alloy grade consumption). Formation Metals are rapidly moving towards produc-



tion. "The Idaho Cobalt mine is beginning the construction stage of the mine facilities, which was preceded in the past several months by detailed engineering and final design. The site has already been cleared; this summer Formation Metals will start excavation work and will build the portal bench," said Mari-Ann Green, chairman and CEO of Formation Metals. "Formation will bring the Idaho cobalt mine into production ourselves; we do not need to use another mining company to help us," said Mari-Ann Green.

The confidence of the company is well justified; they have a very high grade underground deposit, the demonstrated support of the local community (when their mining equipment was brought in it was part of the Fourth of July parade) and have received awards for corporate excellence from the North West Mining Association. Their construction and project management partner, JDS Energy & Mining Inc., have an admirable record of building mines on time and on budget for some of the larger players in the industry.

The Boleo project of Baja Mining, mentioned in our article on copper, will be a significant producer of cobalt, with a planned average yearly production of 3.7 million lb of cobalt for the first five years of

production, falling slightly to 3.6 million lb after that. This cobalt production will come on-stream, along with the zinc, slightly after the copper production.

"Baja Mining officially started construction November 15, 2010, and we are targeting to have copper production starting in the first quarter of 2013. Cobalt and zinc circuits will come on probably three months later," said John Greenslade, president and CEO of Baja Mining.

While lithium ion batteries look to be the most promising technology for electric and hybrid cars, vanadium redox batteries, due to their almost unlimited capacity, are more suited to larger power storage applications associated with wind or solar technology.

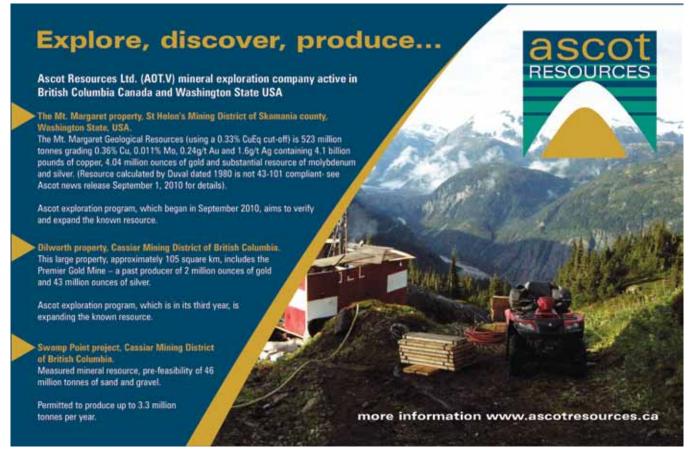
"Today, we are seeing a significant shift towards Vanadium battery technology around the world. In the USA, for example, the Department of Energy has successfully lobbied to install smart grid technology in Ohio, which will utilize vanadium redox batteries. Two of the world's largest vanadium battery companies signed deals with major firms in California at the beginning of this year. Both from a commercial and political level there is a push for vanadiumbased technology," said Adrian Bakker, vice president of corporate communications for Apella Resources.



John Greenslade, president, CEO and director, Baia Mining.

Apella Resources hold what are potentially two of the largest vanadium deposits in the world, located in Quebec. The Lac Dore deposit has a non-compliant resource of 102 million mt, with the potential to add a further 30 to 50 million mt from a northern extension.

On the Iron T deposit Apella Resources believe they potentially hold 250 mt, based on a geophysical airborne survey. "As with Lac Dore, Iron T is a vertical structure, which gives it a significant advantage over the Bushveld complex; namely, that we



can utilize open-pit mining. Combine this with the excellent infrastructure in the area, which includes road, rail, power and a large human resource pool, and Iron T is set to be one of the largest and most economical vanadium projects in the world," said Bakker.

Across the border, Vancouver vanadium companies are playing their part in the Canadian mining influx. American Vanadium holds the 20 million mt Gibellini property in Nevada and, just a short distance north, lies EMC Metals' Carlin Vanadium project.

"[The Carlin Vanadium resource] is a significant, NI 43-101 compliant resource, which we believe is the largest undeveloped vanadium deposit in the United States," said George Putman, president and CEO of EMC Metals Corp.

In a prime example of the technical expertise of the Vancouver industry, EMC Metals plans to leverage off its technological know-how on the Carlin Vanadium project.

Having acquired the Technology Store, a company specializing in the development of specialty metals extractive technologies, in 2009, EMC Metals is uniquely placed to develop the Carlin Vanadium project more efficiently and cost-effectively than most other companies could.

#### **Niobium and Tantalum**

Niobe, daughter of the Greek hero Tantalus, was famously punished for boasting of her many children. Niobium, Niobe's namesake, has a similarly large number of offspring; ferro-niobium is used in super alloys, niobium-germanium is used in superconducting magnets, lithium niobate is used in mobile phones and other electronics and niobium in its pure form is used in everything from steel production to commemorative coins. Rather than punishment, however, niobium has enjoyed prices that surged at the end of 2010, to settle at around US\$35/kg.

Currently, the only niobium-producing province in Canada is Quebec. Two Vancouver companies, however, are looking to change that. The first of these, in the hands of a company more than capable of putting mines into production, is the Aley niobium project of Taseko Mines.

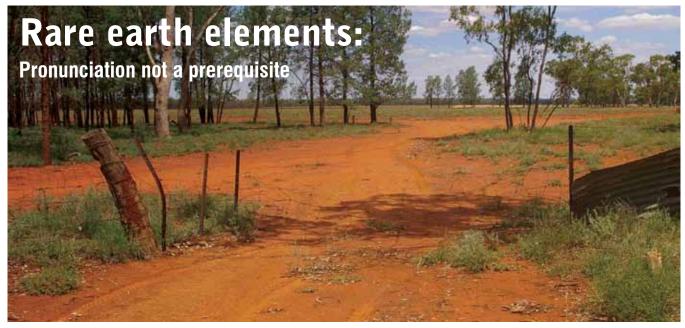
Having acquired the property at an early stage of development, Taseko is pushing ahead towards production.

"In the context of the current market for ferro-niobium, the grades and quantity that we are estimating for this deposit are very exciting. We are therefore moving ahead with this project, aiming to do some more definition drilling and then start on a feasibility study possibly as soon as quarter four of this year. One of the biggest technical challenges on this project will be the metallurgical work required and we aim to get started on that this summer," said Russell Hallbauer, president and CEO of Taseko Mines.

The second is the Blue-River tantalumniobium project of Commerce Resources, which holds an indicated resource of 36.35 million mt at 1700 g/mt niobium and an inferred resource of 6.4 million mt at 1890 g/mt niobium. What is most exciting about this property, however, is not its niobium content but its tantalum content.

As may be guessed, the name tantalum comes from the father of Niobe and, indeed, the two metals are chemically similar. Tantalum, however, is even more rare than its child. "The Blue River tantalumniobium project is one of a very limited number of active projects in a commodity that has prices rising dramatically," said Chris Groves, corporate communications for Commerce Resources Corp. "Tantalum has one of the greatest supply-side deficits of any commodity and there are only two truly active tantalum projects in the world, with Commerce Resources holding one, and yet this information comes as a surprise to many people."





Farm country — home of EMC Metals Corp.'s Nyngan scandium project, NSW, Australia.

The rare earth elements (REE) consist of the 15 elements in the lanthanide series, a list of names that most people in the mining industry, let alone investors or the general public, cannot pronounce. Praseodymium, for instance, is a metal that very few people have heard of, yet is used in applications as diverse as aircraft engines and cigarette lighters. Slightly easier to pronounce, scandium and yttrium are also added to the rare earth elements list. Although not part of the lanthanide series, they usually occur in the same ore deposits and exhibit similar chemical properties.

The lack of elocution on the part of investors when it comes to REEs has not, however, prevented the wave of enthusiasm that has recently descended on the market.

China, responsible for an estimated 97% of the world!s REE production, has for a while imposed quotas on exports of these minerals. In December 2010, they announced a 35% reduction in this guota for the first half of 2011, prioritizing their supply for domestic use. This was the latest reduction in a seven-year downward trend. Panic immediately resulted in prices of REEs shooting skyward. Cerium oxide, as a particularly eye-opening example, has increased in price by almost 4500% since May 2009. The reason for this panic is simple; although nobody can pronounce gadolinium. lutetium or praseodymium. these or the rest of the REEs are present in the majority of the electronic devices that we have come to rely on.

With typical initiative, Vancouver juniors are seizing the opportunity to make up the shortfall. Tasman Metals, to take one ex-

ample, holds an impressive nine properties in Scandinavia; home to the discoveries of nine of the 17 REEs. Their flagship Norra Karr project has yielded positive results from its first drill program, with significant intersects of heavy REEs. With no dedicated heavy REE mine currently operating anywhere in the world, it is in this subtype the biggest supply shortage is expected to hit. The reputation for technical excellence that Vancouver companies enjoy comes into play in these types of complex deposits. EMC Metals, with their focus on advanced technology, are demonstrating this to good effect on their Nyngan Scandium project.

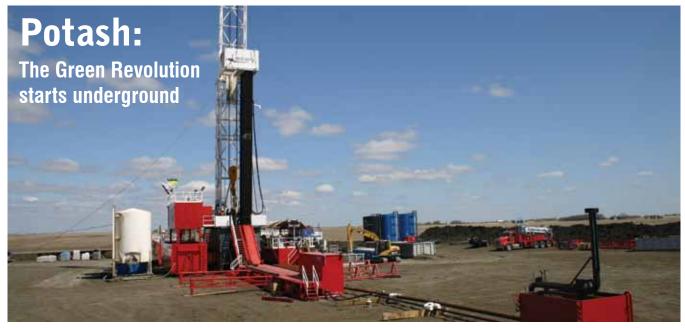
"The specialty metals industry is in one important respect quite different to most other mining/mineral businesses, in that you have to be prepared to go further than just discovery and resource definition to capture value. With a gold resource, for example, the technical requirements for extraction are typically well understood, and therefore people are quite willing to attribute rising value while resources are still in the ground. Specialty metals, in much the same way as rare earths, are less understood in terms of extraction technique and estimated product economics. The focus is therefore on bringing the product to market," said George Putnam, president and CEO of EMC Metals Corporation.

Due to China's dominance over the REE market in the past decade, expertise like this outside China is quite rare. Zimtu Capital Corp., although focused primarily on very early stage exploration opportunities, nonetheless has a few companies which have stayed with them and, in do-

ing so, have gained significant expertise. The Eldor project of their flagship company, Commerce Resources, is described by newsletter writer John Kaiser as 'the most important new grassroots rare earth discovery since market interest in rare earths took off in 2009.' The reason for this hype was obvious from the very first drill hole in 2010, which intersected over 200 m of approximately 1.7% REE mineralization. Included in the drill results were more than 60 m of heavy REEs. This significant interception of both light and heavy REEs is very unusual amongst other known REE deposits around the world.

Continuing the success of Zimtu Capital companies in this field, Quantum Rare Earth Developments hold three properties in the United States, Canada and Australia. Their flagship property, the Elk Creek project in Nebraska, is currently being explored for niobium, although the company does believe it has significant potential for REEs, and similarly sees significant potential for REE producers. "With China's population and economic growth I also believe that they will become a net importer in the long run," said Peter Dickie, president and CEO of Quantum Rare Earth Developments Corp.

"With the demand for rare earth elements rising considerably, driven in particular by new technologies in the green movement, China will start requiring more of these commodities than they can produce. At the same time, they are actively pursuing measures to bring their mining practices in line with environmental standards, which will curtail their production," Dickie said.



Milestone project exploration program in Southern Saskatchewan, 2009, Western Potash.

Although people speak of potash in a very general sense, potash is not actually a distinct mineral. Rather, the term 'potash' refers to various salts that contain potassium. Nonetheless, the overall effect is the same; give crops more potassium and it will result in increased yields and improved drought and disease resistance. While this may not attract interest from miners more used to working below ground than above ground, what equates to is a growing market.

Food is an important issue. At a G8 meeting in 2009, global leaders put it

alongside the global financial crisis on their list of top priorities. The world's population is predicted to rise from 7 billion today to more than 9 billion in 2050 and to support this, crop yields of staple crops will have to rise by an average 1.5% a year.

After the 'Green Revolution' of the 1970s transformed agricultural practices, it seemed this would be simple.

Today, however, annual wheat yields are growing by an average of just 0.5%, with rice yields just a fraction higher. The ability of potash to raise these yields, in a

comparatively environmental friendly way, is increasingly in demand.

A full 40% of the world's potash comes from Saskatchewan. None of it comes from British Columbia. It may, therefore, be wondered whether any Vancouver junior would be able to competitively enter a developed mining district to look for a mineral in which his own business community has no track record.

Nonetheless, a few have entered the market, and they have entered it successfully. Encanto Potash Corp., a company



Core from Western Potash's Milestone project



working very closely with the First Nations in the area, have seen their stock price jump at the end of last year, spurred by drill results on its Muskowekwan property in Saskatchewan. Potash One, on the basis of their Legacy project, was bought out by K+S Aktiengesellschaft, the world's leading supplier of fertilizers.

Western Potash, having started with their Russell project in Manitoba, has since expanded their operations, moving into the heart of the global potash trade, Saskatchewan. Competing with established producers, Western Potash is leveraging off two key assets at their Milestone project; the technical expertise so typical of Vancouver based companies and the strength of its project. "Western Potash has some considerable advantages over the existing mines," said Dave Price, projects director for Western Potash. "This is the first new potash mine in the region for 40 years so we definitely have a technology advantage. Another considerable advantage is the ambient temperature of the deposits. These are several degrees higher than our competitor mines here." The importance of this temperature difference is further explained by Ian Graham, economics and modeling for Western Potash. "Two things happen with temperature. The rate of dissolution of potassium goes up with temperature at a greater rate than it does with sodium, resulting in a richer potassium head grade when you recover those brines, with less sodium salts. Secondly, a considerable amount of heating is required throughout the operations, so a 5-10° temperature advantage will result in a massive saving over the course of a year. Relative to our competitors, therefore. we will have a modest but meaningful difference in potassium head grade and we will require less energy to achieve that."

Western Potash is looking to complete its pre-feasibility study on the project by August and from there move straight on to a feasibility study, aiming for production by 2015. The solution mining method being used provides cost benefits and is, in keeping with the environmental credentials of potash itself, more environmentally friendly. "Nowadays the whole world is concentrating more on environmental issues. The Milestone project is a mine that is not going to harm the environment, but instead will complement it and, in some areas, perhaps even help clean it," said Price.

"The mining method we are using has very little surface disruption. We are looking at using wastewater for operations. We are exploring the possibility of using more environmentally positive methods of power generation and of course, the product itself is a non-toxic product," said Price.



Western Coal, now part of Walter Energy, operates 15 mines in three countries: Canada, U.S. and the UK. The company expects to produce 20 million mt by 2012.

#### Coal

Vancouver companies are comfortable with coal. The mineral is British Columbia's largest source of mining revenue and the province is Canada's largest producer of it. Estimated production for 2010 equated to C\$4.276 billion, dominated by metallurgical rather than thermal coal, which was 61% of the total value of mineral produced in the province. A total of 10 coal mines are currently operating in the province, five of them operated by Teck, three of them by Western Coal (now a division of Walter Energy) and the other two by the smaller companies Quinsam Coal Corporation and Peace River Coal. Doug Horswill, senior vice president of sustainability and external affairs, Teck, believes that Canada as a whole has "over 100 years of production remaining" in steelmaking coal. While perhaps not fitting with Vancouver's reputation as an international hub, British Columbia's richness in this regard means that most juniors interested in the black and dirty form of carbon stick close to home. Specifically, they stick to two main areas; the Peace River coalfield in the northeast district of the province and the Coast district. In the former, the three producing mines of Walter Energy/Western Coal are situated alongside the Trend mine, operated by the majority Anglo American owned Peace River Coal. In the latter, the Quinsam mine of Quinsam Coal produced an estimated 445,000 mt of thermal coal in 2010. The third main producing area, Elk Valley in the Kootenay-Boundary region, is home to the five coal mines of Teck; Coal Mountain, Elkview, Fording River, Green Hills and Line Creek. Although these mines feed off multiple coal seams characterized by their low sulphur content and ash chemistry which results in a high Coke Strength after Reaction (CSR), the region does not seem to attract the same volume of exploration from junior companies as the northeast and Coast districts.

The Peace River coalfield, or the Inner Foothills belt, is estimated to contain more than 160 billion mt of medium and low-volatile bituminous coal. Given this sheer quantity, the area attracts a large number of exploration projects. Coalhunter Mining Corp., who by the time this editorial is published should have completed their merger with Cadero Resources Corporation and will be operating under that name, has an historic estimate of 67 million mt of recoverable reserves at their Carbon Creek project. Incidentally, the Carbon Creek project is one of the oldest known coal deposits in British Columbia, with a history dating back to 1909.

First Coal, as discussed in the article on British Columbia, is quickly advancing its Central South and South Cirque properties in the Peace River coalfield. Outside of these, however, they hold a significant land position. "The Central South and South Cirque properties are the main focus for First Coal and will continue to be until they reach a very advanced stage of development. However, outside of these two properties we hold approximately 50,000 hectares of licensed properties and approximately 40,000 hectares of proper-

ties under application. The historic reserve in the combined properties that First Coal holds in the Peace River coalfield is up to 1.6 billion mt of primarily metallurgical coal, as measured by the work of Gulf Canada in the 1980s. We do, therefore, see a lot of potential in our other properties, but will wait to determine how to proceed with them until we have completed exploration on the Central South property and then the South Circe property," said Douglas Smith, president and CEO of First Coal.

Even Walter Energy/Western Coal, already with a significant operating presence in the area already, picked up an additional 60 km of exploration property at the beginning of this year. "This area has been previously unexplored, we have just completed a brand new road through there, and we have hit major coal seems on a number of occasions as we have been going through," said Keith Calder, CEO of Walter Energy. "We are doubling our exploration budget for fiscal year 2012 and we still see a lot of potential to expand. In the Willow Creek area, for example, we have the Willow Creek South and Upper

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Willow Creek targets adjacent to our current properties, which we are exploring."

The Coast region is a relatively newer target for coal exploration, yet its potential has already been proven, not only by the Quinsam mine but also by the advanced stage projects of Compliance Energy's Comox joint venture. "The Comox joint venture is currently in the middle of the permitting process for the Raven underground coal project and we are targeting production to commence in the fourth quarter of 2013. We have already completed two exploration programs on this property; drilling 13,000 m of exploration holes and conducting 21 km of high-resolution reflective seismic surveys. With a combination of the data from these activities and previously existing information on the property, we were able to complete a NI 43-101 resource report and a pre-feasibility study, which we released in October last year," said John Tapics, president and CEO of Compliance Energy. "In addition to the Raven underground coal project, we also have the Bear coal deposit. This is a metallurgical coal property located just 10 km from the Rayen project. We have identified an 8.5 million mt resource on this property, which we could develop in the future provided that the Raven project is successful."

It is perhaps worth quickly mentioning, if only to preserve the globetrotting reputation of Vancouver juniors, that some companies have taken this expertise in coal elsewhere. Prophecy Resources, led by the frantic energy of CEO and chairman, John Lee, has the producing Ulaan Ovoo coal project in Mongolia, alongside two other advanced stage project in the country. In the same country, even Entrée Gold, amongst their hugely impressive landholdings, hold a small coal deposit at Nomkhon Bohr. After all, who better to mine coal than British Columbians?

#### **Diamonds**

The history of the Canadian diamond industry is one of raised hopes then disappointment. After a meteoric rise when Canadian diamond production went from zero in 1998 to producing C\$1.684 billion worth in 2009, a host of junior companies, many of them Vancouver based, jumped on the proverbial band-wagon to seek their fortunes in Canada's arctic north. The primary stimuli for this carbon rush were the Diavik and Ekati mines, the first diamond mines that between them produced C\$6 billion worth of diamonds in their heyday of 1998 to 2004.

This host of junior companies generally failed to find what they were looking for.

As investors lost interest, many of the junior companies changed their focus. Some, however, simply moved their explorations abroad. The diamond industry in Vancouver is now one of the most widely dispersed of any mineral, as junior companies in the industry follow the mineral to far-flung corners of the planet.

Hudson Resources, for example, is the leading explorer for diamonds in Greenland and have already found a diamond-bearing kimberlitic dike at their Garnet Lake proiect. Almost 5000 miles away in Guyana, Sacre-Coeur Minerals holds three historically producing diamond claims. Just under 6000 miles from Sacre-Coeur, Diamcor Mining is quickly progressing toward production at their Krone-Endora Venetia project. "The Krone-Endora Venetia project is located directly adjacent and geologically related to DeBeers flagship Venetia mine," said Dean Taylor, president and CEO. "It is an alluvial deposit, and more specifically a rare eluvial type deposit; that is one km of material that has been sheared off the kimberlitic pipes of Venetia and deposited directly adjacent to them. When we acquired the project, DeBeers had already done a number of drilling programs and bulk sampling programs on the property over the past eight years, meaning that Diamcor now has the necessary information and data to plan for near-term production." At home, however, the Canadian north still holds potential for some companies. After all, the Canadian diamond industry was still worth over C\$2 billion in 2010, a large portion of that coming from the Snap Lake and Victor mines that DeBeers opened just three years ago. Peregrine Diamonds, a Vancouver junior run by the respected Eric Friedland, has discovered two new diamond districts in Nunavut, with seven kimberlites on their Chidliak project showing economic potential.

In order to find diamonds in the second largest country in the world, it is important to have a big landholding. Diamonds North Resources, to take an extreme example, initially held nine million acres at their Amaruk project in northern Nunavut. To put that into perspective, it is significantly bigger than Belgium. Based on heavy mineral sampling, they have since cut that down to a mere 1.4 million acres (roughly the size of Brunei). What is interesting about Diamonds North Resources is that in the process of this heavy soil sampling, they have not only found 29 kimberlites, but have also found significant quantities of gold, silver, copper and nickel. In other words, if the diamonds do not work out for them, they have a back-up plan.



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Rescan Environmental Services Ltd.'s biological sciences team at work doing baseline characterizations and environmental impact studies.

With almost half the world's exploration and mining companies headquartered in Vancouver, it is natural that British Columbia has developed a thriving service sector. Given the nature of most Vancouver based clients, the service sector in British Columbia is distinguished by a large number of companies concentrated on front-end services, particularly engineering, geological, environmental and socio-economic consulting services.

AMEC's operations in Vancouver are typical of how most international companies place their BC operations within their global set up.

"AMEC has over 150 offices and Vancouver is one of our flagship offices in the area of geotechnical services, such as tailings and design, as well as the environmental permitting side, from water quality to geochemistry," said Michael Davies, vice president of mining, earth and environmen-

tal at AMEC. "Essentially we are responsible for the 'soft' engineering services."

"The Vancouver office is also involved in the early study phase; doing resource modeling, mine planning and design, metallurgical process design and all levels of studies," said AMEC's vice president of business development and strategy, Greg Oryall. "Vancouver is the head office for mining and metals for North and South America."



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Greg Oryall, vice president of business development and strategy, AMEC

As reforms in the province's mining codes take effect, business is growing strongly. "In British Columbia, it has taken a while for some of the relatively prohibitive legislation to filter away. The BC industry took a long time to come back," said Davies. "Most of the mining work that AMEC had been doing was outside of BC, and now we can turn our focus back to the province. AMEC as a whole is welcoming BC's revitalization because our employees would just as soon work in their own back yard if possible."

As demand for services takes off globally, service providers are finding themselves reliving the heady days of 2006/7. In this climate, and mindful of the lessons of 2009, consultancies and EPCM firms are aware that they can only grow so fast and that building long and sustainable relationships with clients is key.

"Clients across the globe are beginning to realize there is a world wide shortage of high quality engineering capacity," said Greg Fauquier, global managing director of mining and minerals processing at international consulting and EPCM firm Hatch.

"They understand that building long-term relationships with their engineering service providers is mutually beneficial. By the same token, we also recognize that building long-term relationships with our clients is important to our own business. With increasing commodity prices, many exploration prospects become economic, which in turn drives project development, and thus the increasing need for experienced engineers and constructors," Fauquier said.

David Alt, operations manager, mining and metals at global consulting and EPCM firm, Fluor agrees. "We have developed life of mine relationships with a couple of clients, performing some of this work out of San Francisco and Vancouver. For clients that can see the value of what we bring and are not necessarily looking for the lowest cost, we can provide follow-up or enhancement services," he said.

# The tale of Vancouver's smaller service firms

The global economic crisis quickened the rate of consolidations across nearly all parts of the mining service sector. Does this spell the end for smaller niche players, or does the rise of mega consultancy and EPCM firms actually create an oppor-

tunity for the smaller specialist? Jay Collins, president of Vancouver-based construction management specialist, Merit Consultants International, believes small companies have certain advantages. "We inhabit a great niche, but at the same time are garnering the attention of owners who really want a better choice than going to the same large companies and ending up with the C-team," he said.

Many clients see value in breaking down large EPC and EPCM contracts. "On Copper Mountain we were asked to work with Hatch who did the engineering and procurement, while we did the construction management; a classic example of how it works," said Collins. "We work with the engineer and attempt to aggressively expedite deliverables from them. Our view of things is that when the EP and the CM are executed by a single contractor it does not inspire one department of the same company to hustle the other."

"The engineer did all the design drawings and ordered all the equipment. We did all the contract management, scheduling, and project costing and expedited all the capital equipment," he said.

Merit took an unusually hands on approach, doing away with a tier of sub-contractors. "(We) took the owner's existing construction fleet and did not bother with a contractor and did a lot of the bulk earthworks and rock excavation directly before going into construction. The Copper Mountain property is a great mine that was rapidly put back into production on schedule and within budget," said Collins.

The rise in British Columbia's mining industry coincided with a downturn in the Province's wood, pulp and paper industries. Axxent is a company that demonstrates that it is possible for wood focused engineering houses to carve out a niche in the booming mining sector.

"It's difficult to convince the world that you can do a mining project when the only experience you have is with OSB (Oriented Strand Board - an engineered wood product) plants. It really helped to be able to offer other related services like project management and expediting," said Peter Smith, president and CEO of Axxent Engineering.

"The fact that we were new and could come into a project with a fresh perspective was also appealing to some clients... It really came down to having good engineers and, when we grew, we were very careful to select experienced, hard working, creative team players. Our clients have come back to us time and time again because of this."



Merit Consultants were the construction managers of Red Lake mine and subsequent McEwen shaft expansion projects, Ontario (Goldcorp Inc.)

# MERIT CONSULTANTS INTERNATIONAL INC.









### PROJECT AND CONSTRUCTION MANAGEMENT SERVICES

project management construction management contract management site supervision cost control and reporting site safety quality assurance purchasing, expediting warehousing scheduling remediation project execution planning cashflows study management and support risk analysis constructability review capital cost estimating technical and financial assessments

Stantec have a far longer history in the mining sector, but their path is a classic one. "We started 15 years ago without that much presence in the mining industry," said Nick Poushinsky, senior principal, environment management Canada.

"We focused on higher risk players and junior companies where the corporate infrastructure was weaker and they were more reliant on external help. We supported them with environmental assessments and permitting exercises and this helped us establish credibility in the sector. Our strategy today is to focus more on the mid-tiers and majors and to follow our clients globally. We are continually adding new clients as we grow through acquisition and we aim to support them globally," Poushinsky said.

Building a reputation for excellence and providing cutting edge technology are crucial to success. "If people don't know who you are and it's a new technology, you'll have a difficult time working your way into the business," said Greg Rasmussen, process manager, mineral processing, Xstrata Technology Canada. Xstrata Technology, part of the Xstrata Group, is a well known brand, but used to have a limited presence in North America.

"It can be a challenge to break into new markets, but when we sit down with the



Part of Ledcor's extensive fleet at the Willow Creek open-pit mine Chetwynd, British Columbia.

customer and go through the technology, they're able to understand it and they can really see our enthusiasm... It really helps that people recognize the Xstrata name," said Rasmussen.

For the foreign equipment supplier looking to break into the market, securing connected employees will also be key. "I've been in the mining industry in BC for quite some time so I've got some strong relationships here which have helped us as well," he said. Despite setting up shop in Canada just as the global economic crisis hit, Rasmussen today feels bullish. "We've gained

a pretty strong foothold in North America. We spend a lot of time with our customers in the Americas taking them to our mine sites in Australia and South Africa to see the technology in action and to demonstrate it will work in Canada".

In much of the world, contract mining plays a large part in the mining industry. Given the maturity of the British Columbian and Yukon mining sectors, it is surprising that contract mining does not play a greater role. "Companies here tend to be smaller and the people who run them cut their teeth in the field as mine operators and



view themselves as such," said Randy Daggitt, vice president of mining at Ledcor CMI. "Projects in Canada are generally good but not necessarily massively profitable. The mining companies have to be as efficient as they can, and in certain regards there is a price to pay for employing a contractor."

As well as offering contract mining services, Ledcor have carved out a niche offering 'development plus' services. "One unique thing that we do is to develop and run an operation, bring in people and capital, and then hand over the operating mine to the client. We saw the need for a company that does this, bearing in mind that many junior mining companies do not have sufficient resources, planning and safety systems to set a project in motion," said Daggitt.

#### **Labor and Skills**

In an industry as cyclical as mining, labor will always be a challenge during the boom times. Globally, explorers, miners and their assorted downstream service providers are struggling to staff up. This problem is particularly acute in western Canada.

"Staffing our projects is the greatest challenge we face," said Daggitt. The mining sector in BC and the Yukon competes with Alberta's booming oil industry on the other side of the Rockies for people. "The

oil sands can afford to pay higher wages. We are therefore working very hard to recruit and train people, though there never seem to be enough people who want to do construction jobs," he said.

Furthermore, Canada has tightened up its visa requirements in the wake of the global economic crisis. "We have a well developed, and rather costly, work permit process. For top level expertise we often need to recruit internationally and it can be difficult to get visas for these people. NAFTA laws make things easier between here and the U.S., but if we could bring in certain experts from Chile or South Africa, even for short time periods, it would be beneficial for the industry," said Fluor's Alt.

"Miners should do more to integrate foreign talent," said Brent Thompson, senior vice president of mining and minerals at EPCM firm Wardrop, a Tetra Tech company.

"As an industry we need to focus on dealing with people from other cultures. We should engage with some of the mining engineers that China is training in large numbers and bring them into the consulting community. This is a very good way to develop the workforce." Many seasoned hands feel that not enough has been done to foster talent over recent years. "There might be less mentoring in the mining in-



Pat Stephenson, director and regional manager, principal geologist, AMC Mining Consultants Ltd.

dustry than there once was, which makes it hard for people to learn the skills necessary for them to move to more senior roles".

"The industry has not done enough to develop people and it is already paying the price for this," says Greg Fauquier of Hatch.

"We need to be getting people interested in a career in mining before university, offering financial support and work experience opportunities through school and providing mentoring on the job," said Pat Stephenson, director and regional manager, principal geologist at AMC Mining Consultants.



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Rescan Environmental Services Ltd.'s engineering and geoscience group provides services ranging from baseline studies, environmental assessments, and permitting, to the design and implementation of remedies to mitigate environmental impact.

For some the solution to the labor crunch lies in remaining niche and at the smaller end of things in a world of ever larger consulting firms.

"We're in a pretty good place with what we do in servicing the industry because we are a relatively small, independent specialist consulting firm. A lot of small firms were bought up by the bigger guys, but we remained independent and our clients appreciate that. All the consolidation going on around us strengthens our position as an independent company. We see the opposi-

tion strengthening because there are fewer of us doing this sort of thing. Because we're private and specialized we attract great people that make an amazing team," said Jeremy Haile, president of the Canadian part of environmental, geo-technical and water and waste management consulting firm Knight Piésold.

Most consulting firms recognize that they need to help in the development of the mining workforce. "We recognized an increase in business in 2004 so we started hiring graduates when everyone else was looking for people with five to ten years of experience. We now have a group of people with four to eight years of experience who have all been trained specifically on our systems so that they have become very valuable employees. We haven't had a hard time looking for people because we've done a lot of training and building up our staff internally," said Haile.

"The mining industry is so hot that anybody who is really good is tied into a project and unlikely to become available," says said Poushinsky, senior principle, environmental management, at North American consulting firm Stantec. "Developing and retaining our existing people is key. We invest a lot in training our staff. We recognize it's a buyer's market, and we need to keep our staff interested and active. The variety of our work helps with this, but training programs ensure that staff see themselves developing and continuing to learn."

Large companies cannot build the numerous teams of people that they require by recruiting individuals piecemeal. "We complement our organic growth strategy with a continual evaluation of opportunities to acquire companies that fit with, enhance and complement our capability," said Poushinsky.

"Our CEO has laid out a clear strategy for growth and it would be hard for any firm to meet these targets through organic growth alone," he said.

Despite the clear challenges facing the industry in the longer term, labor prospects look better. "There is a change in university enrollment where more students are pursuing mining as their first choice profession. Looking forward, we will see more young people entering the mining business, " said Greg Oryall, vice president of business development and strategy at global consulting and EPCM firm, AMEC.



#### **Going Global**

Vancouver junior's greatest strength lies in their ability to find and develop resources across the globe. The British Columbian service sector has evolved to support this.

Being in Vancouver is key, argues Britishborn Jay Collins, president of construction management specialists, Merit Consultants. "We are in such a central and high profile location here in Vancouver for the mining sector, that we can service projects around the world. Even the cosmopolitan nature of the workforce here gives us advantages for working in foreign locations from China to Chile to Russia." Collins believes that even for the more hands-on disciplines, such as construction management, there is little reason to establish satellite offices. "We tend to do all our project set up from the Vancouver office. When you are doing the construction management there is nothing really to do in a remote office until you get to the field," said Collins.

Canadian EPCM firm Wardrop were taken over by U.S. global Tetra Tech in 2009. The resulting combination gives Wardrop the opportunity to leverage their expertise in mining, whilst using Tetra Tech's international reach. "For us (international business) it is a key component of our strategy going forward," said Brent Thompson, se-



Knight Piésold designed the mine waste and water management plan and is providing QA/QC support during the construction for Mt. Milligan.

nior vice president of mining and minerals. "We are very strong in Canada and are involved in most mining projects that are currently occurring here. On the American side of the business, there are some states where the mining industry is vibrant and we are very active there."

Wardrop already had some good international business and are a rare western success story in the Chinese market. "In Asia we have been very active over the last five years and have done over a hundred projects in mainland China."

Service companies have struggled to break into the Chinese mining sector. Thompson has this advice for people looking to emulate Wardrop's success: "Our success in winning business from Chinese mining clients is based on us showing commitment; that we are there to stay and to learn as much as they are learning."

Looking forward, Vancouver headquartered Wardrop will expand even further. "Globally we see Latin America and Australia as two areas that we are going to be focusing on to drive growth going forward.

# PRACTICAL SOLUTIONS FOR THE GLOBAL MINING LIFE CYCLE

Tetra Tech specializes in every aspect of global mining projects, from exploration to development, to production and reclamation. Our areas of expertise include:

- Mining Studies: Due Diligence, Scoping to Feasibility, JORC and NI 43-101
- Tailings Facilities and Water Management
- Environmental: Permitting and Reclamation
- Corporate Social Responsibility
- · Engineering, Procurement and Construction Management
- Materials Management and Contracts





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We are also currently very active in Turkey, and you will see us driving growth there as well."

Being based in Canada is rarely a negative and often a selling point. Even sitting under the umbrella of an international organization, Knight Piésold Canada is able to leverage the Canadian advantage. "Clients often rely on us to apply the highest international standards to a project, even when local regulations are less stringent. Most of our clients with overseas projects would say that they want to build their projects as if they were in Canada and to do the right thing environmentally. If we're putting our name on a social environmental impact assessment then it has to meet Canadian standards," said Haile.

# The world at its feet: breaking market Vancouver

There can be little doubt that Vancouver is one of the most attractive locations in the world in which to have an office. While few senior companies are based in the city, and the size of most British Columbian projects pales when compared to some of the world's mega projects, Vancouver is a great place both to win business and to execute it from. Australian geological and engineering consultancy firm AMC Mining



Pat Stephenson, director and regional manager, principal geologist at AMC Mining Consultants Ltd. reviews drill core with a client at the Sangdong mine, South Korea.

Consultants (Canada) targeted Vancouver and London when it sought to go global. The company's experience is typical of many that try to break into the market.

"The motivation for setting up here was primarily due to the fact that we were already working in this time zone and recognized that it could be serviced better," said Stephenson. "We had done the mining component for the New Afton block cave

development near Kamloops in 2005/06 and they requested that we keep a senior engineer on in Canada and work with them through the development stage. This gave us a solid piece of ongoing work and a bit of a footprint, so we took advantage of the timing and set up an office. During 2007-2008 there was plenty of work to be had. We grew from two consultants to about 13 in one year and were able to find the people, as well as the clients."

As with most of their competitors, AMC had it tough during the global economic crisis. "After the 2008 financial crisis we really had to hit the market hard to get work because we were not very well known at that point in Canada. It paid off because we now have more work than we can handler," said Stephenson.

Matching resources to jobs is key, and Stephenson took a reserved approach. "One of the worst things that you can do in consulting is to promote yourself as capable of doing certain tasks and then not being able to meet certain expectations because you do not have the right staff. So to start off with, we kept a relatively low profile in Vancouver until we got the right people on board... We were constantly advertising during our first year here."

Ausenco are another Australian firm seeking a share of the Vancouver pie. This major EPCM firm was not so well known on this side of the pacific. "It has been challenging here," said Stephen Dawson, president of Americas region, minerals and metals.

"As in all countries, people here can be parochial; and moreover, whilst Vancouver hosts a large mining industry, we were surprised by how small the community is. However, we pride ourselves on the qual-



ity of our minerals processing talent, and also have experts in the fields of crushing and grinding, which are very important here." he said.

"We started doing pre-feasibility and bankable feasibility studies, and gradually more work followed, but when the crisis struck we lost half of our work in one day. Continuing to work on studies through 2009, as larger projects were not available, we built up a relationship with Barrick, and, a year ago, won the Prosperity project for Taseko. Unfortunately Prosperity was put on hold by the federal government, but we went on to win the Gibraltar project with the same company. As a new firm, the pressure to deliver is high - reputation is everything," said Dawson.

Ausenco's strategy has been to service the clients others might put on the back burner. "People come to us as an alternative to the big three EPCM firms because smaller mining companies may not be treated well by them. We are more willing to help businesses grow and develop and have a track record of doing so in Australia, notably with Oz Minerals," he said.

Ausenco also work with some of the world's largest mining companies. "Working with junior and tier one miners presents



Ausenco provided innovative heap leach and run-of-mine design services to the technically demanding Lomas Bayas, an open- pit copper mine located in the Atacama Desert, Chile.

different challenges. The juniors require more guidance and help progressing to the next stage, but we have demonstrated that we can do both, and do not favor one over the other," says Dawson.

In a globalized industry, face-to-face relationships remain vital and in the tight few blocks that is Vancouver's down-town, service providers find an ideal environment in which to develop and deliver business.

Vancouver is a logical hub for servicing the Americas, unlike the east coast. It is possible to speak to both London and Sydney during the working day.

The city is an obvious second or third location for any European or Australian company looking to build a global network. Crucially, the city is home to an unrivalled concentration of clients and skilled workers.



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B2Gold provides support to school and communities including: donation of books, providing transportation for students, and nutrition programs.

"If you discuss a mining project with someone who has a technical background, they will focus on the technical aspects of the project and what that means for its success or failure. If you discuss a mining project with someone with a financial background, they will focus on the financial nature of the project. Really, however, the success of most mining projects around the world depends on getting permits in a timely manner and achieving acceptance from the local community where you are working." Fortunately, the philosophy of Jay Chmelauskas, president and director of Western Lithium Corp., is now widely repeated, if not so eloquently, throughout the global mining industry.

In Canada, mineral exploration, development and production projects must deal with the First Nations (the aboriginal peoples of the country). Having had a presence in the country for more than 25,000 years, the federal and provincial governments are keen to ensure First Nations groups benefit from their claims to traditional lands. In most provinces and territories, treaties drawn up roughly a century ago define and delineate the claims of various 'bands' (First Nations' governments), of which there are over 630 currently recognized in Canada. In British Columbia, however, a different course of history means that today the province holds approximately 200 bands with unresolved land claims.

While the responsibility of settling these land claims technically falls on the government, the delay in doing so means that companies often must deal with the issues themselves. "It is not the responsibility of any mining company to decide who has the right to control these mineral lands. This is an issue to be sorted out by the government and the First Nations. The issues that are arising come from differing claims by different First Nations groups, rather than from the mining industry," said Ian Smith, CEO of Yellowhead Mining. "In order to avoid these issues, however, it is very important that the company is involved with the First Nations right from day one."

After this initial contact, employment is very important for communities that often have unemployment rising close to 80%, such as at Hard Creek Nickel's Turnagain project. Pacific Booker Minerals, for example, provides funding to the First Nations group around their Morrison



# Harper Creek Copper-Gold-Silver Project

- Preliminary Economic Assessment completed March 2011
- Detailed Feasibility Study commenced April 2011
- Planned total production 2.857 billion pounds copper,
   265,000 oz. gold and 4.87 million oz. of silver in concentrate
- Mine life 22 years at a milling rate of 70,000 tonnes/day
- Stripping ratio life-of-mine 0.88:1
- Adjacent rail, road, power, town and water
- Project is 100% owned by Yellowhead Mining \*
- Senior management has extensive international experience with large scale open pit copper projects
- Excellent exploration potential
  - Subject to 3% NSR royalty capped at \$2.5 million, subject to inflation adjustment and a 2.5% NSR royalty on an estimated 3.3 m tonnes planned to be mined starting in year nine

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Tel: 604.273.5597 Email: info@yellowheadmining.com www.yellowheadmining.com



Klohn Crippen Berger Ltd. won the "The 2010 Consult Australia Award for Excellence" in the water category for their work on the Antamina mine.

property in order to enable them to participate in the environmental assessment process. Ideally, this employment should be sustainable. Even projects that go into production will often have a short mine life and an economy based solely on unskilled mining jobs will quickly collapse after the mine goes. "[We] have offered employment opportunities," said Warren Robb, COO of TTM Resources. "We strongly believe that any community benefit must be sustainable and with this in mind offered jobs to anybody who could show they had some form of training."

As befitting a company of its size, Western Coal/Walter Energy has encouraging initiatives specifically aimed at the education sector. "Western Coal works closely with schools and First Nations groups," said Keith Calder, CEO of Walter Energy. "We are involved in scholarship programs and a number of other initiatives to form closer relationships with the local communities and local universities. We have been able to successfully attract and retain people through the effort we put into developing them and this will not change as we move forward."

In recent years, British Columbia governments have started to share the income they receive from mining with First Nations. Newly appointed BC Minister of Energy and Mines, Rich Coleman, said: "The previous Liberal government introduced a system of revenue sharing with First Nations and we will build on this and help companies build relationships with various bands... Different First Nations have different attitudes toward mining and we cannot apply a 'one size fits all' solution. We are going to consult, accommodate and meet our legal responsibilities, but at the end of the day we need to put the shovel in the ground. Our industry is learning that they can get there quicker if they engage early with First Nations. In the past, industry has ignored their legal responsibilities and this

was done at their peril. If you show respect to the First Nations and you work with them in a respectful way you can reach a deal and get on with building a mine."

Clem Pelletier, CEO of environmental and social consultants Rescan Environmental Services, is in the rare position of having seen some mines all the way from exploration through to closure and remediation. "The reforms have given the First Nations a little more authority. It has reinforced their right to sit at the table," Pelletier said. "The reforms do not pertain to mineral rights, but what British Columbia has done is that they now share the revenue from the mines with the First Nations. Some of these commitments are significant; over \$100 million, so we are talking about large sums of money split amongst relatively small native groups over the life of a project."

Pelletier is keen to note mining companies did normally have a social conscience. "Mining companies, by and large, have always cared about communities; it's just been 'their' community: miners and their families. The legacy of mining has to be what we truly leave for the communities and what we do for these communities in a sense of engagement, of training, opportunity development and business development." he said.

Attitudes towards environmental standards are also improving. "Even in Canada there are a lot of orphan mine sites where communities have not reclaimed the land. As late as the late 1980s the focus was just on designing the dam and making sure it stayed there for the mine life," said Len Murray, vice president of mining and environmental group, Klohn Crippen Berger. "Around this time awareness was growing of acid mine drainage, which is one of many issues we now look at, including communities and care of water, and mining giants began to consider how areas would look after the mining had finished."



"Our dream approach today is to enter a project at a very early stage where we can determine not only the most efficient place to build the dam, but also where people will accept us doing so, and where we will have the minimum long-term impact," he said.

"In developing countries, especially where a mine is all there is to a place, closure literally means closure. You have to think about what happens to a place after everything, including the town and the airstrip, has gone; that lasting legacy issue is an area that mining and society in general has not yet got to grips with. Companies must recognize that they will not be around forever," said Murray.

Outside of British Columbia, this aspect of mineral development becomes less of a challenge. "In British Columbia there is no defined First Nations' territory and the boundaries between the claims of different bands continually shift," said Randy Turner, president and CEO of Silver Quest Resources. "In our case there are three to six First Nations bands whose traditional land covers everywhere from the Capoose property over to the Davidson property. In Yukon, by contrast, these issues are very clearly defined. We deal with two First Nations bands and the boundary between



Walter Energy is committed to mitigating the impacts of our activities on the environment and to supporting sustainable economic development

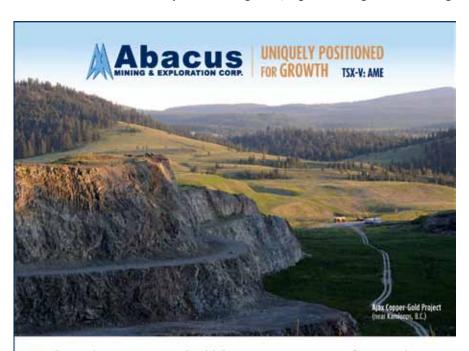
their lands is very defined. We therefore know exactly whose land we are operating on," he said.

An experience of the difficulties of British Columbia has seemed to equip Vancouver companies abroad with a firm knowledge of what should be done. In Guyana, Stronghold Metals has 22 local employees for only two expatriate employees. In Argentina, Argentex Mining is one of the larg-

est employers of geological students in the country, allowing students from the La Plat University to train onsite and recruiting the best and brightest. In Mexico, Geologix Explorations Guadalajara office is staffed entirely by Mexicans. "Geologix's philosophy is to have Mexicans build Mexican mines," said Dunham Craig, president and CEO of Geologix Explorations.

In Nicaragua, a country of tremendous potential that has been stunted by revolution and outside interference, B2Gold Corporation's development of the La Libertad mine is, at C\$100 million, one of the largest capital projects ever in the country. However, as Clive Johnson, president and CEO of B2Gold, points out, just as important is the way that they are conducting that development. "We do deals with the small miners who are illegally on our ground. We build roads for them to access other veins that are not a priority for us and we will then encourage them not to try to recover the gold themselves with dangerous and environmentally damaging practices, but to bring their gold to our mill, where we will charge a small toll fee and give them a much higher gold recovery. Combined with all the tree planting we're doing, hiring locals and our Aqua de Vida (Water for Life) project and numerous other projects, we are real community leaders."

As always, it is the majors who must lead the way. As well as regularly meeting and communicating with the local communities in which they work and holding a position as one of the leading donators to hospitals within British Columbia, Teck also recognizes its position as a more global entity and strives to reflect that in its corporate social responsibility initiatives. "As a producer of zinc from our facility in Trail, we are also



- Advanced stage copper and gold deposit in a proven area of past production
- Over \$50 million spent on +200,000 metres of diamond drilling
- Excellent access to power, water, highways, deep seaport
- Senior management with unparalleled mining experience
- Strategic partnership with one of the largest global copper companies

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# Mining keeps communities moving

Our mines produce more than just minerals. They support families, build infrastructure, and foster economic growth. All of which helps to strengthen the communities where we live, work and play.



involved in a number of programs aimed at reducing the number of instances of zinc deficiency around the world. We have partnered with international organizations such as UNICEF to deliver zinc supplementation and treatment plans to children in developing countries," said Doug Horswill, senior vice president of sustainability and external affairs, Teck.

While most exploration and mining companies may have the right sentiments when it comes to community engagement and environmental stewardship, there are more powerful forces at work behind the scenes. "The major change that we have seen in the last decade is how the banks view social and environmental risk," said Pelletier. "If you want to get more than C\$10 million of debt, which means basically any mine development, you will need to meet the International Finance Corporation rules on environmental and social sustainability. Nearly all private and international development banks require you to meet these standards. It's not just lip service; banks realize that environmental and social risk is substantial, and that they are less easy to qualify than the geological and demand/ supply risks that we use to focus on. The banks have become the gate-keepers of social and environment



School in the village of Opodepe painted by paint donated by Creston Moly Corp.

stewardship. If they think there is a social or environmental risk, they will not lend on a debt or equity financing and your project is in financial trouble."

In South Africa, Vancouver companies have adopted particularly well to the jurisdiction-specific requirements. Diamcor Mining International has a partnership with Nozala Investment, a black empowerment group that establishes programs in education, health or other long-term advancement goals. Hunter Dickinson has engaged in similar programs. "Our ethos of local engagement has grown to a point where it has actually become an opportunity," sid Ronald Thiessen, president and CEO of Hunter Dickinson. "In South Africa, for example, we took a Canadian shell company, Anoorag, put some capital into it and did a deal with a black economic empowerment group. We turned that company into a black economic empowerment entity, according to South African legislation. This enabled us to do a deal with Anglo Platinum, becoming a fundamental cornerstone of their empowerment program that was essential to getting their mineral rights renewed."

Vancouver companies do have a good record for best practice around the world. However, it must be remembered that it is the completion of what these companies set out to do - find a deposit, develop a deposit, build a mine. "In five years time Taseko Mines will have completed the Gibraltar Development Plan 3 at Gibraltar mine, the Aley niobium property will be home to a producing mine and the Prosperity property will be built and operating. The achievement of these targets would not only put Taseko Mines in a very strong position for its shareholders, but would also benefit the communities that we interact with and the wider population of British Columbia. The taxes that will flow through the municipal, provincial and federal governments and our ability to support thousands of high-paying and skilled jobs will benefit the entirety of the system that Taseko Mines is a part of. We are very happy to be able to contribute to our community and we are very excited about the future," said Russell Hallbauer, president and CEO of Taseko Mines.



#### PACIFIC RIDGE EXPLORATION

## Drilling in the Yukon's White Gold District in 2011

\$3 million initially allocated to this year's exploration program

- 4000m of drilling to test 2 km² Skookum Jim anomaly containing up to 8.1 g/t gold in rock samples and 1.25 g/t gold over 30m in trenches
- 5 gold-in-soil anomalies within the Mariposa property
- Mariposa has seen active placer gold mining for more than a century
- Management: 40 years experience, 13 deposits discovered, 4 mines found
- 53.8 million shares outstanding, \$4 million cash as at June 2011

John S. Brock, President & CEO pacificridgeexploration.com G2 Consultants: 1 604 742 9990





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Victoria Gold's Eagle gold project on their 100% owned Dublin Gulch property in central Yukon, photo courtesy of Victoria Gold.



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