

# Mining in Saskatchewan & Manitoba

*Land of living skies and mining opportunities.*

## TABLE OF CONTENTS

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Saskatchewan:	
The 'have-not' province now has it all.....	<b>p106</b>
Potash.....	<b>p112</b>
Uranium.....	<b>p117</b>
World-class resources.....	<b>p120</b>
Moving the industry forward.....	<b>p123</b>
Manitoba.....	<b>p129</b>

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Cover photo: Allan potash project in Saskatchewan, Canada for client Potash Corp., courtesy of AMEC.

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# Saskatchewan

The 'have-not' province now has it all"



Aerial view of some of the piping Graham fabricated and installed at Cameco's Key Lake acid plant. Photo courtesy of Graham.

Sparing almost no company or commodity, the global economic crisis has taken a heavy toll on the mining industry and the consequences have led to a significant shift in the global mining landscape. As the world's major mining companies re-assess their business strategies, junior mining companies search for ways to survive the lack of support from the capital markets. There has, however, been one constant throughout this period: the world's popula-

tion is continuing to grow, and with it an increase in both food and energy needs.

Enter the former 'have-not' province of Saskatchewan, now the second-leading mining jurisdiction in Canada with mineral production valued at more than \$9 billion. Saskatchewan has a greatly underdeveloped mining industry, arguably due in part to its former political climate. Now, as a leadership shift in the province begins to take shape, the land that borders Alberta's

oil sands to the West and the Northwest Territories diamonds to the North, appears poised for unprecedented growth. Though Saskatchewan's mining sector is overshadowed by prolific Canadian rivals such as Quebec, the province nonetheless has the potential to become a leading international mining jurisdiction.

Expanding Asian markets are driving a significant amount of this growth. Saskatchewan's exports to China have almost doubled in value since 2007 and there has been a 66% increase in exports to Japan. Saskatchewan is currently engaged with the federal government in negotiating a Comprehensive Economic Partnership Agreement with India. There is also an increasing interest from Asian companies assessing the investment opportunities of Saskatchewan's resource sector.

While potash and uranium present the most significant resources currently being developed in the province, exceptional deposits of gold, diamonds, coal, rare earth minerals (REMs), amongst others, are continuing to see advancement. But, as a humble province of just over 1 million residents, a number of key challenges stand in the way of Saskatchewan's significant growth and a secured place as a leading global mining leader.

## Saskatchewan: Land of Opportunity and Legal Complexities

by Danny R. Anderson, Partner, MacPherson Leslie & Tyerman LLP Lawyers

With stable government, competitive taxes and fair royalties, opportunities for exploration and extraction abound. Mining companies in Saskatchewan must be mindful of a myriad of legal considerations, including permitting and environmental issues, First Nations' rights and consultation, government royalty and taxation structures, and mineral rights issues.

The provincial and federal Crowns, as well as private persons, hold significant mineral lands. Most mining companies need to secure exploration and production rights from both the provincial Crown and other parties, to ensure a viable project.

In Saskatchewan, there are different regulations for different commodity groups. One problem that companies can experience is that regulators will not typically allow activities relating to minerals that fall outside the Crown disposition that the mining company was granted. When obtaining rights to private lands for a particular commodity, companies should consider the other types of industry activity in the area. If possible, it may be prudent to also obtain rights to other types of mineral lands within the company's area of interest, or secure contractual restrictions, to prevent future conflict with other industry participants.

Saskatchewan's uranium industry is a model for collaboration between industry and First Nations. The agreements entered into between mining companies and First Nations groups address complex issues including local involvement, workplace and business development, and environmental stewardship and sustainability. In the potash sector, First Nations reserve lands and federal regulatory agencies can be involved. When this is the case, the agreements are particularly complex, and the regulatory processes to be followed to achieve legally effective agreements are very challenging.

Navigating the legal landscape to turn opportunity into profit is no easy task, but we take pride in advising the resource industry.

## The Regulatory Framework

Now ranked eighth in the Fraser Institute Rankings as a global mining investment destination, it has only been recently that the province has started to open up to the world. The evolution of the regulatory framework surrounding the industry, as well as initiatives taken by the current conservative government, has played a large part in this.

In 2012, Premier Brad Wall's Saskatchewan's Plan for Growth highlighted a number of initiatives to encourage growth in the sector: With a number of recent trips to Asia and Europe, and a focus on bringing investment and skilled labor into the province, the government appears motivated to open up the borders and partner with the mining industry. A stable and competitive mineral royalty regime is also present. "The province's potash royalty tax affects the business decisions of players in Saskatchewan, and the government's reduction in mining taxes has provided incentives for companies to establish and maintain their head offices in Saskatchewan and ultimately keeps the mining business here stronger in the long term," said Tim Timmerman, partner, Ernst & Young LLP in Saskatoon.

Others focus on internal policies as areas that require attention. "[We do] not feel that the current royalty structures for uranium and potash mining, and to a lesser extent oil and gas, are positioned for optimizing opportunity. The provincial government has carried out work to improve the situation, but the system is still cumbersome and lacks competitiveness deterring financiers from making investments," said Kent Smith-Windsor, executive director, Greater Saskatoon Chamber of Commerce.

As the traditional potash and uranium projects that have been the bread-and-butter of Saskatchewan's mining sector expand, regulators have had to adapt their approach. "Saskatchewan's regulatory regime historically has not experienced a large volume and diversity in size of projects; particularly with respect to the permitting of a new large potash project, there has been a learning curve for the regulators," said Kent Gustavson, discipline manager, social and economic sciences, Rescan Environmental Services, who entered the province in 2008 working with BHP's Jansen project.

The development of projects in other commodities has also posed a challenge to regulators. "Saskatchewan has a good regulatory framework for mining, but the focus has been primarily on potash and uranium. That said, we have overall had a very positive experience communicating with the government and the government is making proactive efforts to review old legislation to apply it to other minerals," said Patrick Soares, president & CEO of Foran Mining Corp. who are currently developing their McIlvenna Bay zinc-copper-silver-gold VMS deposit in the province.

Changes to this framework have increased international interest in the province. "Only recently have the regulations become more

relaxed, and we are now seeing an influx of investment and exploration and development projects," said Neil McMillan, president and CEO, Claude Resources Inc.

A noteworthy portion of this interest is coming from key emerging Asian markets, with China being one of the premier countries focused on by both the provincial and national government. "The Canada-China Foreign Investment Protection and Promotion Agreement, signed in February [2012] by Stephen Harper on a visit to China, means we have come to the country at the right time," said Jiqui Han, president and senior engineer, YanCoal Canada Resources, who are currently developing potash resources in the province.

Related to this regulatory framework includes balancing both federal and provincial expectations in the mining arena. "Our main environmental concerns are more federally focused as we are seeing an increased incursion by the federal regulatory system in provincial areas. The Responsible Resource Development Act was one federal initiative we applauded. The Environmental Impact Assessment Act and the One Project, One Review were critical and it will be interesting to see how this will evolve in the province as it has actually expanded the list of companies covered under the act," said Pamela



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## Interview with Hon. Tim McMillan, Minister Responsible for Energy and Resources, Tourism Saskatchewan and Trade

### What key initiatives is the government taking to maintain an attractive regulatory and operational environment?

The Saskatchewan government works hard to collaborate with industry. Our regulators are very open and transparent and work proactively to answer questions the industry has, or find solutions when required. Our ministry will reach out to those looking to invest in Saskatchewan.

### We have recently seen a number of major projects put on hold and periods of suspended production across the province. What does this mean for the mining industry in Saskatchewan?

Each company will make decisions internally, taking into consideration other projects around the world. BHP and Vale both mentioned market considerations when they announced holding their projects in Saskatchewan. We know that the resources, regulatory and tax system in Saskatchewan are good, and that, simply put, not all exploration projects will go through. When new mines do go forward, we will remain a destination



of choice, for example the new K + S mine coming online – the first for the province in 40 years.

### From 2008 to 2028 the mineral industry in Saskatchewan will see \$50 billion of investment, is Saskatchewan poised to manage this level of growth, particularly skilled labor?

Saskatchewan has a tight labor market, but we are working hard to ensure the training is in place to manage this. We are also recruiting skilled labor from not only Canada, but overseas. We have had recruitment missions abroad, the most

recent of which was Ireland, which was attended by industry, our ministry, and even Premier Brad Wall, the success of which was shown by the 800 workers offered positions, many of which were in the mining industry. We are also focusing on this training at home; at the University of Saskatchewan, there is a Mining Centre of Excellence in place, which is currently being ramped up. Mining is a large part of our future and we will work hard to ensure we will be successful; skilled labor will remain a part of that.

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Schwann, executive director of the Saskatchewan Mining Association (SMA).

A balanced and responsible environmental and social framework will prove key to ensuring positive relations between the Saskatchewan population and industry, and this appears to have thus far been largely successful. "There is a tendency to tighten, not loosen, regulations and there is a certain risk associated with that as it can push industry away. There must be a balance and benefit to all; increasing or tightening regulations for the sake of doing so does not equal environmental protection. Saskatchewan regulators recognize this, which is critical to the sustainability of the industry in our province. ... The environmental permitting system in Saskatchewan is often used as a benchmark in other Canadian mining jurisdictions, particularly on the uranium front," said Mark Liskowich, principal consultant environmental management, SRK Consulting.

### Mining vs. oil: a battle for the province's skilled labor

The greatest challenge currently facing the mining industry in Saskatchewan is arguably the availability of skilled labor. Alberta's developed oil sands next door have drawn a significant amount of labor resources from

the province. "Saskatchewan is large in land mass but has a very small people-resource base; Saskatoon itself only has a population of just over 250,000 people, limiting our options for securing local engineering and construction expertise. This has been a challenge, but currently one we have managed to overcome," said Will Brandsema, vice president and general manager, mining and metals, AMEC.

There is hope that with increased population in the province, this problem can continue to remain more a concern than reality. "In terms of the labor pool, the province has lost a lot of people in the last decades, but the population has grown steadily for the last 26 consecutive quarters, which is much more than most places can say," said Steve McLellan, CEO, Saskatchewan Chamber of Commerce.

With an industry that currently engages 30,000 employees in its ranks, population mass is critical to its continued growth and success.

The movement of mining companies into the province has brought with it a services sector and skilled personnel. "We have found that professions that previously did not exist in Saskatchewan have now arisen with the mining industry. Many companies are now building head offices in the province and senior positions are opening up which were previously out of province," said Henry F. Feldkamp, president and CEO, March Consulting Associates.

Others suggest before looking overseas, the local underdeveloped labor market should first be addressed. "The opportunities are significant for First Nations workers to get into the mines and make a great lifelong career. That being said, the success we have seen in the province is not as encouraging as I would like it to be... Saskatchewan's First Nations will continue to be a key labor pool in the future," said Steve McLellan, CEO, Saskatchewan Chamber of Commerce.

A number of companies have found that, rather than relying purely on external education, in-house initiatives can have a strong impact. "The government is too bureaucratic to react to our immediate needs, but we have formed partnerships with the Saskatchewan steel fabricators and ironworkers associations to form programs aimed at utilizing our valuable aboriginal community by providing the training needed to make them a part of our mining community. Using the Saskatchewan Indian Institute of Technologies (SIIT), the first aboriginal ironworker certificate program was delivered which the government is now looking to expand with more similar programs. If we want our aboriginal community

to be a meaningful part of Saskatchewan's economic growth, we need further outreach, and training initiatives that can provide them with skills at a young age," said Ross W. Fraser, general manager and senior vice president, Supreme Steel Saskatoon which has been involved in the majority of the province's major mine expansions.

Skills training and education may well prove the critical factor for both the industry directly, and its supporting service sector. "There have been a few developments in recent years. SIAST—the Saskatchewan Institute of Applied Science and Technology—has begun a commercial pilot training program, and SIIT has created a program for aviation mechanic engineers (AME)," said Dennis Baranieski, VP of business development and customer relations, West Wind Aviation, who provide fly-in, fly-out services for many northern mine sites.

This current crunch, however, may in the short-term lead to a potentially expensive competition for skills. "In Saskatchewan, crowding in the engineering industry has made costs escalate already – everyone is competing for the same people, and salary escalation here is not sustainable. Consulting services fees are among the highest in North America, so people in our sector may have to accept pay reductions in the future," Jason



Jason L. G. Mewis, president and senior engineer, ENGCOMP.

L. G. Mewis, president and senior engineer, ENGCOMP, a Saskatchewan company offering engineering and risk management planning to the mining community.

Improving safety within the province may also positively impact this situation. "Safety has unarguably been the most important innovation in the province. Prior to the last five years, Saskatchewan had the worst industrial safety record in Canada," said Mike Fedoroff, general manager Saskatchewan operations, senior project manager, Hatch.

While the mining industry itself has a strong safety record, some companies are taking internal initiatives to ensure new and

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Corrie Pitzer, CEO, SAFEmap International.

higher standards. "While everyone in the industry can say that they are focusing on Mission Zero, or an accident-free workplace, we actually ingrain this in the Graham culture and everything we do. Using OSHA measurements for safety, we also are the first in the province to have both drug and alcohol testing on our work-sites, as well as fitness tests. This was not requested by the industry, but an initiative taken by Graham to ensure we remain as safe as possible as a workplace and set a precedent for the industry," said June Verhelst, vice president, industrial, Graham, which now has 85 years of experience in the province.

Service companies as well have found a niche addressing this problem. One example of this is SAFEmap International, who will establish an office in Saskatoon in 2013. "The traditional approach to safety is to set the rules and make people comply with them, with the underlying assumption being that this will keep employees safe. However, we have developed our model based on the belief that this underlying premise may actually be flawed. Accidents happen, even when people follow rules. We have established a concept called 'risk competence,' and rather than focusing on people's behavior, we focus on their mindsets and cognition," said Corrie Pitzer, CEO, SAFEmap International.

Initiatives like this, both on and off the worksite, may greatly assist this labor deficit in the future. "A crucial part of the labor retention strategy in the mining industry is the development of an off-the-job injury prevention strategy, and millions of dollars can be saved with such a program," said Gord Moker, CEO, Safe Saskatchewan.

"Safety is not a matter of trying to achieve 'no accidents.' Not only is 'zero accidents' an impossible goal, but it also does not mean that the employees are actually safe. A company can have zero accidents, but employees can still be put in dangerous positions, either because they are lucky or escape injury," said

Pitzer. "We are thinking in 'safety beyond a number,' and this is my dream and vision for the mining industry. We want industries to think outside the narrow viewpoint that safety is just a matter of measuring incidents.

### 'Doom and gloom' or another mining cycle?

Saskatchewan's mining industry has not always seen this much optimism. Home to the legacy of Tommy Douglas, who became Canada's first socialist Premier in 1944, some state that Saskatchewan endured a flight of capital from the province and delayed development of the industry. "In the early 1970s a further left-wing premier was elected, and the Saskatchewan Mining Development Corp. was formed giving them total entrenchment in mining, oil, and gas, where significant royalties were imposed; a flight of capital from Saskatchewan followed resulting in the sterilization of its capital market," said Tom MacNeill, president and CEO, 49 North Resources, which invests in exploration activities around the province. "Ten years ago the situation eased with the government introducing legislation to make Saskatchewan a more mining-friendly destination, stabilizing mining and oil and gas royalties, and a realization that external capital was needed to extract the resources in the province with accompanying royalty payments."

For juniors already struggling to find financing, capital is difficult to come by in the province. "Even in 2012 the province is still lacking a capital market with only one investment banking team in situ," said MacNeill. "The biggest concern today for the industry is access to capital; junior mining firms are finding it difficult to find financing required in the current markets," said Jeret Bode, investment banking director of MGI Securities, the province's only active investment bankers in the province.

However there may be cause for optimism in the medium-term as indicators suggest a market in full-swing of the industry super-cycle, leading to inevitable recovery. "Right now the industry cycle is for acquisition and consolidation of junior mining companies and the number of junior mining companies in the market should inevitably shrink as acquisitions by mid to large size mining entities increase and smaller entities merge, let their claims lapse or just disappear. However, with this consolidation the remaining junior mining companies with strong projects and experienced management teams should persevere and be at the top and as the market turns and needed capital flows in again, we should see more project development and an

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Tom MacNeill, president and CEO, 49 North Resources.



Walt Precourt, senior vice president, potash operations, Mosaic Co.

increase in IPO activity in potash, uranium, coal and other commodities and the cycle will reverse itself into a growth market," said Tim Timmerman, partner, Ernst & Young.

### Transport, power and infrastructure

Though this socialist history has arguably crippled Saskatchewan's mining capital markets, it has also contributed to one of the most expansive road systems found throughout Canada, providing a number of benefits to those operating in more remote locations. With 26,000 km of provincial highways and a total road surface of 160,000 km, access issues present in other areas of Canada do not rank as highly as a concern. However, worsening road conditions in some of the more northern regions of the province have threatened this otherwise sophisticated network. "If these transport routes are not invested in soon, we could experience severe difficulty getting to these sites. These roads are the lifeline to the mines; they cannot operate efficiently if there are not properly maintained roads," said Dave McIlmoyl, vice president, Northern Resource Trucking, who last year alone ran more than 9,000 loads predominantly to and from the province's northern uranium sites.

With a number of mines poised for production, as well as the many expansions in the province, water and power security are key concerns for many in the industry. "With regard to solution mining, many of our clients are facing challenges in access to water, and this will pose some challenges to the development of the potash industry in the future," said Karri Howlett, president and CEO, North Rim Exploration.

"SaskPower currently has 15 mines on its register, including the proposed open-pit mine of Shore Gold presently on hold. We have devised a plan for the next 40 years for envisaged power requirements taking into consideration type of power and where it will be required," said Robert C. Watson, president and CEO, SaskPower.

Engaging sources as diverse as hydropower, to coal, with a greater role for carbon capture technologies in the future, the province's power providers remain innovative. "If economically viable and acceptable to the public, it is our intention to progress the small modular reactors for 2027; gas will also be added through private partnerships," said Watson.

Some in the industry appear to be taking their own initiatives in regards to power usage. "Water and power are also issues critical to our operations from a number of angles. We need secure water and power to successfully operate our business and we are firmly committed to being sustainable business partners... We have water and power reduction projects at each of our locations and as an organization we consider how we can be more efficient and build a culture of commitment to sustainability within the organization," said Walt

Precourt, senior vice president, potash operations, The Mosaic Co. These concerns are finding solutions in the supporting service sector. "Graham will also be focusing on our involvement in the mining industry from another perspective; that of power, and in particular power plant construction. One example of this will be at the Rocanville mine," June Verhelst, vice president, industrial, Graham.

As the sector continues to propel forward, industry and government will have to ensure clear, coordinated and innovative solutions to ensure continued success.

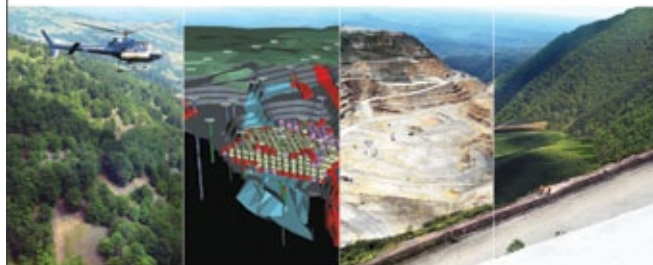
### Saskatchewan's aboriginal partners

While Canada's northern communities have a long history of aboriginal development corporations, this is an emerging trend in Saskatchewan, where they are playing a critical role in leading and supporting the mining industry, not just with labor, but also with supporting businesses. Athabasca Basin Development Ltd. Partnership (AB-DLP), for example, is one success story owned by seven communities in northern Saskatchewan. Its CEO, Geoff Gay, said: "The last 5-6 companies we integrated into the corporation were all based on our confidence in the mining and exploration sector... Mining companies are following the leads of companies such as Cameco and AREVA and are having more dialogue with communities and working on increasing their aboriginal participation... This will create a positive climate for expansion and development in the future."

Four Horse Developments is the investment and business arm of the Sakimay First Nations, who are also targeting the mining industry. "We are focusing on many of the mining, logistics and engineering companies in the province," said Linda Falstead, CEO, Four Horse Developments.

As the industry continues to expand, these companies and others will also contribute significantly to the growth in the province.

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# Potash

## Feeding the world from Canada's breadbasket



Mosaic project manager Steve Grinius surveys the K3 site with an employee from PCL. Photo courtesy of The Mosaic Co.

Even within the mining world, potash is still a commodity that requires definition. "Educating the public and even those within the industry about potash always proves interesting. There tends to be a lot to explain about what potash actually is; it appears to be a lesser known crop nutrient so it is important for us and the province to be educating stakeholders on the importance of the nutrient, because the province is front and center in the discus-

sion on potash," said Precourt of The Mosaic Co. An essential ingredient to fertilizer, animal feed and products such as computer screens, Saskatchewan is the world's largest producer of potash and accounts for 30% of the world's potash production. Between other international potash producing countries Russia and Belarus, two-thirds of the world's potash has now increased food production enough to feed one-third of the world's population.

While the largest current producers of potash, The Mosaic Co., Agrium and Potash Corp. have long histories in the province, Germany-based K+S Group will be opening the first greenfield potash mine, the Legacy Project, in the province in over 40 years. Three of the world's largest mining companies have also made recent moves to enter this market in Saskatchewan. "A great portion of the investment in the province has been coming into the potash industry, and



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we have some of the world's largest companies setting up shop in Saskatchewan," said Kevin Thompson, investment banking senior associate, MGI Securities.

A noteworthy portion of this interest is coming from key emerging Asian markets such as India, with China being another premier country of focus on by both the provincial and national government.

As the world's food demands continue to increase, Saskatchewan's potash may very well be key to future food security and the continued boom in Saskatchewan's economy, with producers investing \$13.9 billion in new and expanding facilities.

### The Blairmore Ring and other challenges

Home to many industry firsts, Saskatchewan also created the world's first solution mine which gave birth to what is now the world's largest potash producing region. This is single-handedly credited to the discovery and development of the Blairmore ring—a diagonal, underground deposit which stretches from a 1,000-m depth in the lower half of the province and all the way into North Dakota. Formed over 350 million years ago, it reaches unmineable depths of 3,000 m as it enters the United States. What is truly unique about the deposit though is the technology created to mine the potash.

"Our company began as a partnership between Thyssen and J.S. Redpath to develop an area in the Saskatchewan basin known as the Blairmore Zone located at a depth between 400 m to 600 m within which there is a 100 m layer of unconsolidated sand, saturated with water. Previous attempts to sink a shaft by using grouting technology had been unsuccessful; the only methodology to penetrate the unconsolidated zone is to use freeze technology, which our parent companies introduced to Canada from Germany in the 1960s. Prior to sinking a typical shaft, 32 freeze-holes are drilled, a brine solution is injected and frozen to -32°C; once the freeze-wall has closed and no more water is seeping through, the freeze-wall [or curtain] must be strong enough to allow excavation before penetrating the Blairmore Zone," said Roy Durr, president, Associated Mining Construction who focus predominantly on shaft sinking in the province.

This technology has also found applications in the development of other commodities. "The Athabasca Basin and its uranium deposits are unique in terms of the significant ground water present which can make the development of the deposits difficult; when mining in these areas you



Mark Liskowich, principal consultant environmental management, SRK Consulting.

must be more aware of mining's effects on groundwater and the uranium and potash industries have adopted well. The ground freezing technology in the potash industry has now parachuted into the uranium industry and now forms a critical part of the mining process. The utilization of artificially frozen ground, as well as the groundwater, is a good example of this," said Mark Liskowich, principal consultant environmental management, SRK Consulting.






The provinces varying ground temperatures must also be taken into account. Dr. Ulrich Lamp, president and CEO of K + S Potash Canada said: "There are two rea-



Ulrich Lamp, president and CEO, K + S Potash Canada.

sons that Saskatchewan is unique. From one perspective, you need at least a minimum amount of potash concentration for the permits, and secondly the mine must be deep enough, so that it is hot enough to mine effectively. The deposit must be 1,500 m deep to create favorable conditions, which are warm enough to support a solution mining process. In contrast to this in Saskatchewan, you cannot go too deep for conventional mining, as it is too hot for people to work."

The aforementioned labor crunch has proved a particular concern related to the development and production of potash in



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## MINING IN SASKATCHEWAN

the province. "We are located next door to Alberta, which can be a huge draw to our trade labor and is a major concern facing our clients. People in the industry will commonly change the timing of other jobs to match the availability of labor to ensure a project's success. SNC went from zero to 110 employees in 12 months, which was a major task that required us to bring in workers from outside the province and the country. Another challenge is that for many years there was a lull in potash activity in the province, so we now have a gap and shortage of people between 30 to 50 years old with experience in potash. We are involved with the University of Saskatchewan for continuing education to support the training of future employees and aid in research," said Lawrence Berthelet, general manager, mining and metallurgy, SNC Lavalin, which specializes in potash processing.

The service industry though is also contributing to the optimization of present labor force. "Saskatchewan has about 40% of the world's proven and probable potash resources. The province also has highest underground potash mining productivities per man shift in the world, in large part due rationalization of labor requirements with mechanized mining and materials handling systems," said Rich Saccany, senior consultant for mining, Stantec Consulting.



North Atlantic Potash completed a drill program and 2D seismic on its Foam Lake properties in 2012. Photo courtesy of North Atlantic Potash.

### Saskatchewan – home to the world's mining leaders

Saskatchewan's potash industry has many reasons to celebrate. 2012 marked a number of key anniversaries in the industry and highlighted not only the significant accomplishments in the province, but also the potential to come. This has been embodied in part by recent moves made by many of the world's largest mining companies expanding, as well as moving into, Saskatchewan's potash space, even if the tax base and royalty regime may be tough to swallow.

"The tax base here for potash mining is one of the highest in the world, though that

is offset in part by the fact that the provincial government here makes Saskatchewan one of the most politically and financially stable areas in the world to invest," said David Waugh, CEO of North Atlantic Potash which has claims spread across 1.2 million acres in the province.

Mosaic, which currently has an annual capacity of 10.3 million mt and approximately 2,300 employees in the province, has three mines in operation. In terms of size, the Esterhazy mine, which just celebrated its 50th anniversary, is the world's largest potash mine with 5.3 million mt/y of operating capacity. Belle Plaine, a landmark in itself, is the world's first and largest potash solution mine. Mosaic's third mine, Colonsay, currently produces around 2 million mt/y. "We are undergoing expansions at all three facilities," said Precourt. "50 years ago Mosaic created the ability to sink a shaft down through the Blairmore Formation, which unlocked Saskatchewan's potash potential... We continue to use this same technology today, 50 years later, which is used not only for Mosaic's own expansions, but by other companies as well. The freeze technology highlights the long history of innovation in Mosaic's operations."

K + S Potash Canada, of the German K + S Group, one of the world's leading suppliers of standard and specialty fertilizers, is on schedule to have their Legacy mine in production by 2015 with an aim to reach its full capacity of 2.86 million mt/y by 2023. This would mark the first greenfield project in the province in over 40 years. "There will be three products produced from the site: Potassium chloride (MOP) standard pink, granulated potassium chloride (MOP) pink and industrial potash (KCl 99 compacted). After the ramp-up we will start with 2 million mt/y as of 2017 and then later expand to 2.86 million mt/y. This number could be further expanded to 4 million mt/y, but currently our project only has two phases, end-

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Gordon R. Graham, deputy project director, sub surface BHP Billiton Canada Inc.



Tom Diment, wholesale, vice president potash & phosphate operations, Agrium

ing with 2.86 million mt/y. The Legacy mine is only a small part of the lease at this moment; we have potential to go further. We have different additional permits and licenses in Saskatchewan and will reconsider our position once we have the Legacy mine running,” said Dr. Ulrich Lamp, president and CEO of K + S Potash Canada.

BHP, a global leader in the industry, explains their recent move into the province. “Strategically BHP Billiton likes to have geographic and commodity diversification... Potash presents the opportunity to diversify both geographically and by commodity, and enter the food market; our corporate strategy in Saskatchewan is to develop long-life low-cost expandable potash mines... Our establishment in Saskatchewan was driven by the province’s sizable potash resource, which is high quality, has a reserve of hundreds of years and is relatively simple to mine,” said Christopher Ryder, vice president external affairs, BHP Billiton Canada Inc. The company’s Jansen mine is expected to have a mine life of more than 70 years and over a 10-year ramp up period produce 8 million mt/y. Estimated production date is set for 2015 contingent upon final approval by the board. The mine will also bring new technologies to the province. “Herrenknecht AG’s equipment will be used at Jansen to carry out the excavation and temporary lining shaft work, which has been designed to be safer than drilling and blasting as no people are required on the bench,” said Gordon R. Graham, deputy project director, sub surface BHP Billiton Canada Inc. Jansen will also introduce ‘5-star camp facilities,’ complete with cinema and golf simulator, to help retain the required 1,000 employees at peak production.

If golf simulators on site seem an excessive luxury, ask those who have worked in the industry for years. “While potash may not be the most glamorous commodity, mining it is actually one of the most challenging jobs there is... It is not for the faint of heart, and there is a reason why there are not many companies doing it; we have been mining potash for 43 years and we are still learning,” said Tom Diment, wholesale, vice president potash & phosphate operations, Agrium. “We are proud that we provide the nutrients that help feed people around the world. More and more people around the world need to be fed and the amount of arable land is not increasing, so this means the land needs to be more productive. You need balanced fertilization and potash to do that.” Agrium’s Vanscoy mine currently has a capacity of slightly more than 2 million mt/y, and the company is currently in the process of expanding that by 50%. “We will be bringing this expanded volume on line in the second half of 2014, with full production expected in 2016. The current reserves should last 46 years at the expanded rate and we have additional resource beyond that,” said Tom Diment.

Western Potash is another serious player in the potash field. “Proven and probable reserves on the Milestone project are 137 million mt, and



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**MINING IN SASKATCHEWAN**

it is capable of supporting planned production for more than 40 years,” said Dean Pekeski, executive vice president. A rare story of a junior in the province to develop a potash mine from scratch, the company expects to bring this mine online in 2016. Brazilian mining house Vale has also entered Saskatchewan. With over 16 years of potash development, Vale is a unique case where Saskatchewan’s mining talent came home. “We used a lot of the consulting expertise from Saskatchewan when we were running a South American pilot plant for five years; we learned a lot about the technologies from that experience, and we took that back to Saskatchewan,” said Matthew Wood, project manager, Kronau project, fertilizer business unit.

In the early stages of developing their potential 2.7 million mt Kronau mine, the future of this project will, like many, depend on economics. “We are currently paused, and are looking at ways to raise revenue to advance the project forward. We are considering a range of options, everything from JVs to divestment to internal funding. There is a real push in the global mining market to look at maximizing assets and making the best use of capital expenditure, so Vale is reexamining its priority list and trying to decide what it wants to do in terms of which projects to move forward,” said Wood.

Looking to the long term, Rio Tinto, through its 2011 joint venture with North Atlantic Potash, has entered the potash scene, rounding out the world’s major producing companies in the province. Stating that the company and their joint venture partners will take some time evaluating their land parcels, predominantly ones suited to solution mining, no clear timeline is yet in place for the development of their deposits.

As proven by the major expansions and long mine lives, the mining of potash is an exceptionally expensive endeavor and also requires great patience. “When you look at investing in potash, you cannot think about tomorrow or next year, but must have a vision 10 years down the line. You have to look at growth expectations, which depend not just on Saskatchewan, but potash projects around the world,” said David Waugh, CEO, North Atlantic Potash, which is currently developing their KP-421 Rio Tinto joint venture and 100% owned Foam Lake projects in the province. “If everything in development comes online, there will be more potash than the world can consume. However, we know that is not going to happen, because not all of these are good projects... because of the size of [these projects] and the challenging economics, many companies never take these projects to the final step.”

Two major Chinese players have also entered the potash scene. M & J Potash (M & J), is a subsidiary of China’s Zhongchuan International Mining Holding, and working to develop a solution mine in the Hanley area. Though currently seeking the \$2.2 billion which would be required to take the project into production from Chinese investors and enterprises, they estimate that the project area could support a 1.5 million mt/y solution mine with production starting as early as 2016.

The second company is YanCoal, which is predominantly focused on coal mining and coal-based chemicals, such as methanol and fertilizer. “YanCoal has an annual fertilizer capacity of about 1.3 million mt of urea and 550,000 mt of phosphate, but it does not yet have potash. Moving into this sector, it is an advantage that potash uses the same conventional underground mining methods as coal and the same sale net as fertilizer. Saskatchewan is the only place where YanCoal has potash interests at present,” said Jiqui Han, president and senior engineer, YanCoal Canada. While still in its infant stages of development, the company envisions being in production in five to seven years.

With the newfound global interest in potash, definitions of the commodity may soon be unnecessary.

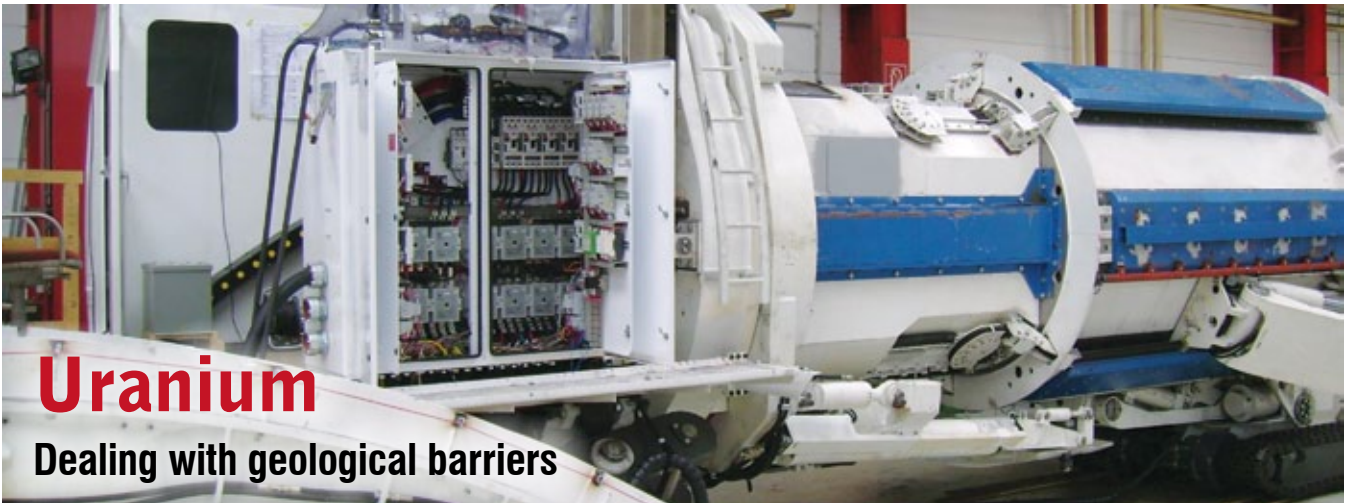
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## Uranium

### Dealing with geological barriers

A tunnel boring machine used at Cigar Lake for underground mine development. Photo courtesy of Cameco Corp., provided by EBA Tetra Tech.

As the global uranium market continues to earn back market faith following the Fukushima disaster, economies around the world are again turning to yellowcake as a source of energy security in the years to come. If feeding the world were not enough, Saskatchewan is again stepping up to the plate with her energy resources. The province's uranium deposits are the richest in the world and account for approximately 20% of global production. The Cameco-operated

McArthur river mine itself accounts for 12% of the world's uranium production and also holds title as the world's largest uranium mine. With boisterous uranium exploration occurring throughout the province, the uranium industry has also seen public support reach levels as high as 86%. With further uranium projects being developed by majors Cameco, Rio Tinto and Areva, as well as an array of ambitious juniors, this sector will prove it can weather the storm.

"[Globally] there are 64 new reactors currently under construction. The growth of uranium/nuclear power today is at the heady peaks of the late 70s and 80s which was USA driven. Reactor construction has now switched to China, Korea, United Arab Emirates, Russia, and India," said Robert A. Steane, senior vice president and chief operating officer, Cameco. As high oil prices and a distaste for 'dirty' sources of energy continue, the energy potential of Saskatch-



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Robert A. Steane, senior vice president and chief operating officer, Cameco.

ewan's uranium reserves is stated to be equivalent to 4 billion mt of coal or 19 billion barrels of oil.

Canada's uranium regulatory regime is arguably a global model, due in large part to the high grades found in Saskatchewan. "If you compare the regulatory environment of the United States to Canada, the safety commission in Canada is involved from the initial planning stages of the mine all the way through production. In the United States, the Nuclear Regulatory Commission (NRC) only gets involved once the product reaches the mill because the mines are treated like any other mine. One reason for

this difference is the higher grade of the Canadian mines," said Ron F. Hochstein, president and CEO of Denison Mines.

"The expectation of the public and government is always accelerating, particularly in uranium where regulations are becoming more demanding with the introduction of increasingly sophisticated measuring instruments of contaminants; it is important to be at the forefront of treatment technology to reduce anything that could be released into the environment," said Douglas J. Kramble, vice president, mining and minerals, Tetra Tech.

Investor faith will continue to push this commodity forward. "Statements of confidence and further market interest around the world are likely to turn the market around... we are seeing an international shift returning in favor of uranium," said Peter Dasler, president & CEO, CanAlaska Uranium.

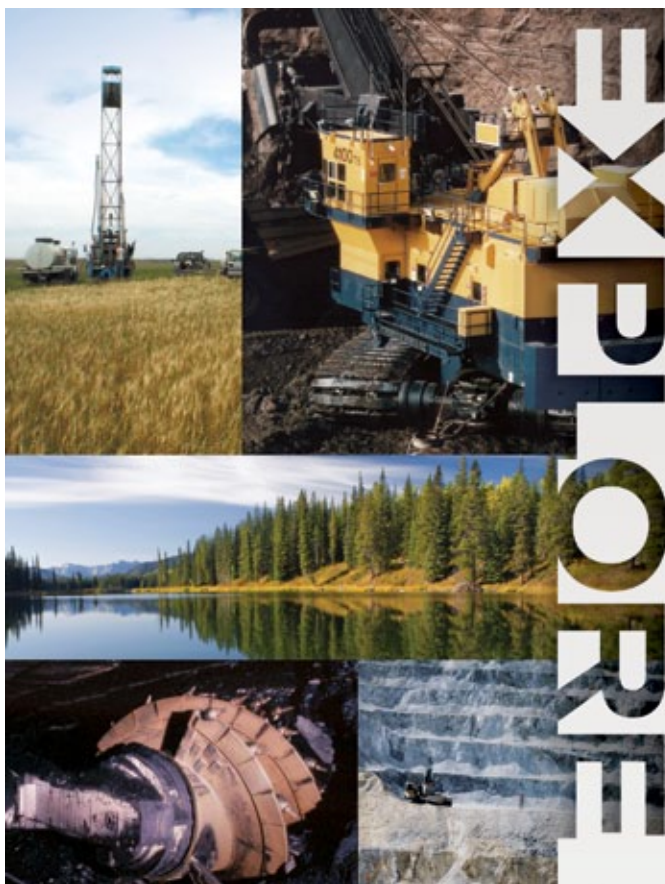
The HEU agreement between the US and Russia will be coming to an end in 2013. Russian HEU that was originally used for its nuclear warheads was converted into lower grade uranium for use in commercial nuclear reactors. This could see long-term demand for uranium begin to increase as the U.S. will no longer have this guaranteed uranium source available to them.

New technologies being developed in Saskatchewan specifically for uranium

exploration are adding to the province's success. Seismology is one example. "We became interested in looking at the application of seismic metal in the Athabasca basin where the exploration is mainly focused on uranium," said Dr. Zoltan Hajnal, professor emeritus of geophysics, University of Saskatchewan. "Seismology can enormously help drilling costs, as it is more specific and direct in locating the anomaly particularly to deposits of 400 meters and deeper. At the right location, seismology as applied in exploration can improve success rates by 40%-50%."

"We employed Dr. Hajnal to progress [our flagship] Keefe Lake with his seismic technology and in November 2011 we carried out a drill program; our very first drill hole hit uranium, though not the key deposit... AUI is grateful to Dr. Hajnal and his University of Saskatchewan team for pinpointing the drill holes so accurately," said Gil Schneider, president and CEO, Athabasca Uranium.

Similar concerns in regards to depth are also seen in geoairborne surveying. "The technical challenges in the Athabasca basin are unique because the targets are deep; you have to understand the unconformities at those depths and how to image them," said Gary Tipper, manager,



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Some of these systems have been particularly advantageous for those active in Saskatchewan. "Like many Athabasca explorers, we use airborne electromagnetic geophysical systems, as well as ground geophysical methods including IP resistivity. Advances in these systems have taken place over the last few years, in particular with regard to how they respond to the rock alteration associated with uranium mineralization," said Mike Cathro, vice president exploration, Anthem Resources.

### Saskatchewan's North: The key players in the Athabasca Basin

Cameco was Saskatchewan's first uranium producer and with their current operations set a global standard for uranium production. "McArthur River is our flagship and is the highest-grade uranium mine in the world, achieving grades 100 times the average of global uranium grades, and accounts for 14% of the world's uranium production. Cameco as a company produces 16% of the world's uranium production. McArthur River is in the 15% to 20% uranium oxide ( $U_3O_8$ ) grade," said Robert A. Steane, senior vice president and COO, Cameco.

Similar to potash, Saskatchewan has geological barriers to this commodity's extraction. "The [McArthur River] deposit is geologically situated at 530 m to 640 m below ground between the underlying Canadian basement rock and sandstone, and is located in a challenging environment to mine: the sandstone rock is saturated with water... In 2006 the Cigar Lake mine development was halted due to a tunnel collapse and consequent flooding, illustrating its difficult environment of saturated sandstone rock at 400 m below surface. The initial inflow location was sealed, and after added problems from a new inflow that occurred while de-watering the mine from the initial flooding were resolved with innovative techniques, the mine was de-watered. Recovery of the mine has taken several years; today, we are well advanced with construction of the mine and equipment installation... Our target for mine production is Q3 2013, and in Q4 2013 the product will be on its way to market," said Steane.

Areva is a global uranium producer and another international mining leader with its Canadian headquarters in Saskatchewan. "The McArthur River mine is a major project; operated by Cameco, with Areva as a 30% partner... In 2012 it produced more than 19 million lb of uranium concentrate – our share of this made us by far the second

biggest uranium producer in the country," said Jarret Adams, vice president, communication, AREVA Resources Canada. "Areva's McClean Lake mill is the only facility in the world designed specifically for processing both low- and high-grade uranium ores. It is an impressive plant, which we are currently expanding to double its production capacity to a level of 24 million lb per year [starting in summer 2013]."

The McLean site may also soon be introducing another world-class innovation, still in its testing phase. "Surface Access Borehole Resource Extraction (SABRE) technology involves a process that uses high-pressure water jets to mine out the deposit from the surface without ever having miners or equipment underground," said Adams. "SABRE has significant advantages in terms of safety and environmental impact compared with conventional mining methods."

Technologies and methods being developed in the province for its uranium are coming about due to partnerships with world-class research institutions. "Many of the uranium deposits present unique challenges that have to be met on an individual basis. At Cigar Lake, a mine scheduled to come on-stream in the next few years, the deposit is essentially a lump of uranium surrounded above and below by wet gravel. They have to remotely mine this with high-pressure water, but they are left blind during the operation; we have developed instrumentation and communication systems that are able to operate in harsh conditions and provide real-time feedback to the operators. We are finding other applications across the world for this kind of technology, especially as mines go deeper and the deposits are harder to find," said Craig Murray, vice president, mining and minerals, Saskatchewan Research Council.

Rio Tinto, along with its move into Saskatchewan's potash scene, has in 2012 also moved into Saskatchewan's uranium scene. With that acquisition of Hathor Exploration and their flagship West and East zones of the Roughrider deposit, Rio Tinto has added nearly 58 million lb of uranium to their portfolio. This deposit ranks as one of the highest grade in the world. They are continuing advanced stage exploration at the site.

While the majors involved in uranium are impressive, perhaps even more so is the amount of active juniors in the province, particularly considering the challenges of the uranium market. Denison Mines, which only made its first discovery on its flagship Wheeler Lake property in 2008, is a key example. "[Our] Zone A

deposit has an average grade of approximately 18%, which ranks it as the third richest deposit in the world. ... If you look at the A deposit on a dollar per cut basis, that deposit is the richest ore deposit in the world across all metals," said Ron F. Hochstein, president and CEO of Denison Mines. In January 2013 Denison acquired more properties in the region, including those held by Fission Energy.

Also partnered with Denison are Anthem Resources. Joint ventured on their flagship Hatchet Lake project, drilling commenced on the property in February 2013. "Historic drill holes on the property have encountered uranium, cobalt, copper, nickel, and arsenic-enriched sulfide mineralization, at or near the unconformity at less than 120 meters depth. Many of the mines in the Athabasca Basin, including Cigar Lake, have signatures with very high base metal contents," said Cathro.

The great amount of activity by Denison may have a great impact on the future of the development potential of the Athabasca region. "[This transaction], so the rumor goes, may act as the final piece in the puzzle for Denison to be taken over by one of the majors, such as Cameco, or Rio Tinto. For us, our shareholders are up 25%-30% [due to Denison's takeover] we get to start new with \$15 million and focus on our Paterson Lake project, which we own in partnership with Alpha Minerals, who have a market capitalization of \$44 million making the prospects very exciting," said Dev Randhawa, chairman and CEO, Fission Energy.

Other juniors in the uranium scene remain active and also showcase the different geological aspects of the Basin. "Our first drill campaign [at the NW Athabasca project], last year, discovered uranium mineralization on the Opie target; seven of the eight holes there intersected uranium, with the best result being 7 m at 0.15%... Everything we have identified so far is at less than 100 m, reflecting our shallow deposit strategy," said Richard Mazur, president and CEO, Forum Uranium.

Though uranium may still face a certain stigma in the international market, the activity in Saskatchewan may be due in large part to its political environment, but also vast future potential for development. "The amount of exploration still available in the Basin is enormous because virtually only one-third of the basin has been explored. The rest of the region is waiting for more comprehensive investigation and in addition there are many major known indicative subsurface structures in these unexplored areas with high potential mineralization" said Dr. Hajnal.

# World-class resources

## Prospects abound beyond potash and uranium



View of the Gunnar Mine site during summer 2011. The buildings and headframe have since been removed due to safety concerns. Photo courtesy of the Saskatchewan Research Council (SRC).

In 2012, \$325 million will have been spent on exploration in the province. While Saskatchewan's potash and uranium often take the province's spotlight, gold, diamonds, coal and rare earth metals, among others, prove that there is something for every explorer.

### Gold


While many associate gold in Saskatchewan's with its rolling golden wheat fields, 2012 marked another milestone of the prov-

ince—it had now produced its 1 millionth oz of gold. "It was only a year ago that we doubled the number of ounces we had in inventory, increasing from 650,000 oz NI 43-101 to 1.3 million oz in nine months. That growth is testimony to the kind of exploration potential that exists in our camp," said Neil McMillan, president and CEO, Claude Resources, who operate the Seabee and Santoy mines. "It demonstrates a big issue for the province of Saskatchewan that

under the right circumstances we have every bit as much potential here to develop precious metals as you do in any other place in Canada."

With less investor attention typically focused on Saskatchewan gold relative to the predominant potash and uranium market, the process of educating investors with regards to the province's gold potential is ongoing, though has proved largely successful. "The education of gold to investors has not been difficult; historically, gold has been ever-present [in Saskatchewan]... The challenge is to educate investors on the opportunities, because of the current fear-factor in the market, investors are reluctant to step back and look at the big picture from a business perspective," said Darren Anderson, president Wescan Goldfields, which is currently exploring their Jojay property.


Even if an education process is still underway, gold is in the process of solidifying its place on the Saskatchewan resource map due to its ongoing development in the province. "Golden Band recently decided to bring some of its resources into operation and is



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Howard Bird, senior vice president of exploration, Brigus Gold, examining rock samples at Brigus' Box Mine deposit, Goldfields project.



currently transitioning from an exploration to an operations company. Roy Lloyd and Komis mines are in production. Our flag-ship property is Roy Lloyd [and] is targeted with 100 mt/d to 150 mt/d through the mining methods of long holing and shrinkage stopping, producing up to 15 g/mt material over the next two to three years. In addition, the Komis mine will produce 500 mt/d over the next two years with an average grade of 6.5 g/mt. Our Golden Heart deposit is in its start-up phase: It has a seven year mine-life with a potential average of about 4.5 g/mt; and is targeted for Q1 2013 to bring on-line" said Matthew K. Conklin, vice president operations, Golden Band Resources Inc.

Others are bringing their wider Canadian experience to Saskatchewan. Brigus Gold, who currently has the producing Black Fox mine in Ontario, and neighboring Grey Fox project, have the Goldfields project as their key focus in Saskatchewan, which aims to be in production by 2016. "We have almost 1 million oz gold reserve at Goldfields already, and we bought that for \$10 million, which is quite cheap compared to the actual value of the property. It is rare to have that kind of open pit that is relatively easy to mine," said Daniel Racine, president and COO of Brigus Gold. "For us Black Fox and Grey Fox are big



Patrick Soares, CEO (left) and Darren Morcombe, chairman (right) at Foran Mining Corp.

steps for the company, and in the medium term, Goldfields is the next step forward on from that. Goldfields is also going to be a 100,000 oz/y producer, which means that Brigus Gold's overall production could increase from 100,000 to 175,000 oz/y at the point when Grey Fox goes into operation, to 275,000 oz/y when Goldfields also begins to produce. The next four or five years therefore promise strong growth for Brigus and part of the growth plan is the development of the Goldfields property."

As is common in the current market, much of this development depends on financing, though with one mine already

in production, financing may be an easier challenge to overcome. Investor faith in gold could help ensure a bright future for Saskatchewan gold producers.

### Base Metals

Flin Flon Manitoba has a long, well-known history of copper-zinc mining development; what many people do not realize though is that the city of Flin Flon itself sits directly on the Saskatchewan-Manitoba border, and minerals never stop at the border. "Quite often when we mention our project in Saskatchewan, the immediate thought is that it might be uranium, potash or perhaps gold,

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and many investors are not aware of the base metal potential," said Fiona Childe, vice president corporate development for Foran Mining Corp.

"Our flagship McIlvenna Bay project is located in east central Saskatchewan, 65 km west of Flin Flon, Manitoba. The McIlvenna Bay project contains the McIlvenna Bay deposit, with primarily zinc and copper deposits and some gold and silver," said Patrick Soares, president & CEO Foran Mining Corp. "We currently have 13.9 million mt of indicated reserves and a further 11.3 million mt of inferred reserves and growth potential within the deposit. This is an unusually large for a volcanogenic massive sulfide (VMS) deposit," said Childe.

The province still holds great potential for copper exploration. "The Janice Lake property sits within a large Proterozoic-aged sedimentary basin that has been identified by the Saskatchewan Geological Survey, and others, as having potential for sedimentary-hosted copper deposits. These types of deposits account for about 25% of worldwide copper production and they can often contain more than 1 million tons of copper, with grades better than typical porphyry-style copper deposits. Some examples of similar types of deposits would be the African copper belt, and deposits in Montana and Idaho," said Scott McLean, president and CEO, Transition Metals. With a number of other deposits in the immediate area, copper-zinc will continue to be an active commodity in Saskatchewan's mining scene.

**Diamonds**

Among the vast array of world class resources, enter one of the world's largest undeveloped kimberlite deposits; the 350-hectare Star Kimberlite, currently being developed by Shore Gold. "Star Kimberlite is comparable to the kimberlite with the coarser size frequency distribution of Letšeng operated by Gem Diamonds in the Kingdom of Lesotho, southern Africa, producing four of the largest 20 white diamonds recorded since 2006," said George Read, senior vice president of exploration and development, Shore Gold. While the kimberlite has a coarser size frequency distribution, it could potentially hold larger diamonds.

"Shore Gold's diamond project is the first in Saskatchewan. A favorable royalties regime has been established with the Saskatchewan government granting a five-year holiday from royalties, affording us time to pay back the initial capex. Government agencies have also been very cooperative with our environmental impact assess-

ment," said Joe Dickson, manager, investor relations, Shore Gold.

Not only is there diamond potential within Saskatchewan itself, but diamonds from around the world are finding their way to Saskatchewan for testing. "[SRC] do some research, but the diamond work is primarily assay work; through some dogged effort and ingenuity of our staff, we have developed what is arguably the best commercial diamond assay lab in the world as confirmed by key clients like De Beers. Our foray into diamonds is directly related to kimberlite pipe discoveries in Saskatchewan, but it has turned into a global business now, with more and more work coming from other diamond-producing jurisdictions in Africa or, for example, the Northwest Territories in Canada," said Craig Murray, vice president, mining and minerals, Saskatchewan Research Council.

"If the market remains strong, diamonds have a lot of potential in the province," said Steve Halabura, chairman, principal, HCF Mercantile, who provides early stage financing to exploration companies in the province. "There were many diamond targets in Saskatchewan that were drilled in the early 1990s, but never followed-up and fully developed."

**Coal**

Saskatchewan is Canada's third largest coal producer, but is also home to the country's single largest thermal coal producer. While focusing more on long-term secured contracts, Sherritt International supplies the province's power producer. 2011 estimates account for 32.7 million mt between its Alberta and Saskatchewan operations.

Though the coal grades in Saskatchewan are quite low, typically a grade best used for thermal applications for power plants, new technologies are also being introduced to promote clean coal technologies. Sherritt has recently opened a carbon plant in Bienfait, Saskatchewan and is also developing a gasification facility in the province. Other juniors are also looking at unique ways to manage this traditionally 'dirty' source of energy. "What is unique about the Quantex process is that it is a direct liquefaction process, using low pressure and low heat. The greenhouse gases coming off the back-end are very low, and the amount of inputs—the water and electricity usage—is also very low in comparison to other processes," said Shane Shircliff, COO, Westcore Energy, which envisions establishing a Quantex plant in the province in the future. The company is currently conducting drilling and exploration.

# Moving the industry forward

Industry partners stepping up to the challenge



An aerial view of AREVA's McClean Lake operation in Northern Saskatchewan. Photo courtesy of ENGCOMP.

Saskatchewan lies at an exciting crossroads. With the first record of coal as early as 1857 in the province, it now stands poised for unprecedented growth in a number of commodities. This growth will be driven largely by expansions to existing facilities of well-established players and the entry to the market of the world's mining leaders. Without a qualified service and support sector however, this growth could be severely hindered. The supporting service industry, it seems, has taken

note. "The province has several mines that require ongoing performance improvement and maintenance. Some of these operations over 50 years old have decades of mine life left, so the opportunities [for our services] will continue into the future," said Lawrence Berthelet, general manager, mining & metallurgy, SNC Lavalin.

These expansions have affected the entire value chain of services in the province. "After the transformation of the business

community [in Saskatchewan] in the last decade, almost every member is directly or indirectly involved with the mining industry," said Steve McLellan, CEO, Saskatchewan Chamber of Commerce. "There is no question about it, companies in Saskatchewan are targeting the mining sector."

## Research and Development

Saskatchewan also houses some of the country's cutting edge research facilities,

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In 2009, SNC-Lavalin / PCL joint venture was retained by Agrium Inc to provide engineering, procurement and construction (EPC) services on the Vanscoy Ultimate Expansion (Vault) project in Saskatchewan.

such as the country's only synchrotron at the University of Saskatchewan. The Saskatchewan Research Council also hosts, among other things, a Pipe Flow Technology Centre, a geoanalytical lab to perform exploration and assay work on uranium and a mineral processing pilot plant set to open in spring 2013. These facilities are proving key partners to the evolving industry not only in Saskatchewan but around the world.

These developments also extend well into the mining processes themselves. "The technical innovation in this province has been incredibly impressive... From my perspective the innovative technology developed for uranium tailings management is the most admirable. I have worked in uranium tailings management all over the world, from Latin America and Australia to Kyrgyzstan, but the in-pit tailings management facilities used in Saskatchewan are the safest in the world, particularly for environmental management, radiation protection and the ease of decommissioning," said Ron G. Barsi, principal, global uranium services, Golder Associates.

### Building a mine 101

National and international EPCMs, some of which previously had a presence in the market, are returning to the province en masse to meet the growing, and specialized, needs of the industry. "We have seen a number of large EPCM companies coming in to the province, though we have always had a fairly strong support sector present," said Pamela Schwann of the SMA. "We also have a very innovative supply sector in Saskatchewan and a number of top rated suppliers who also provide support. We know that a stronger supply sector means a stronger industry."

Many of these returned to the province specifically to assist in the numerous potash expansions. "Stantec began work on the Allan mine for PotashCorp in the fourth quarter of 2008, evaluating options for renovating and upgrading of the Allan production hoist-

ing plant. In 2009, Stantec was awarded a contract to engineer, procure and construct a new production hoisting plant; this project propelled Stantec's present involvement in the Saskatchewan mining sector," said Rich Saccany, senior consultant for mining, Stantec who also have experience with PotashCorp, BHP Billiton, Agrium and Mosaic.

This relocation of talent to the province has extended to the vast engineering expertise necessary for projects of this size. "Norwest Corp. already had some contacts with BHP, which knew we had strength in exploration, and we were brought in during the early stages of the Jansen project. Our role expanded from initial advice to large-scale multi-year field programs; and we recently managed the freeze well program for the shaft sinking. During our on-going support for BHP, we found work for other potash producers and junior companies in Saskatchewan. Underground coal and potash mining use similar methods, so we had available transferable skills within our mining group," said Sean Ennis, vice president, mining and general manager, Norwest Corp., which is opening its Saskatoon office in Q2 2013. "In terms of applying our geological and engineering skills, instead of 200-m or 300-m depth, we were now talking drilling depths

of 1 km. There was much to learn about the technology required and regulations specific to Saskatchewan."

With the growing number of engineering firms entering the province, so too come different ideas on how best to develop these resources, particularly potash. "Mines around Saskatoon are shallow and use conventional methods, while around Regina they tend to be between 5,000 and 5,300 feet below surface. In the 1960s and 1970s, when most of these mines were being built, solution mining was considered the only option, but in my opinion conventional mining would actually be more economic. I think solution mining was selected by junior companies for its low capital investment costs, with consideration not given to the higher operating costs," said Paul Labbe, vice president, Canada, Worley Parsons, one of the largest EPCMs in the country.

For those with a long history in the province, potash expansions have provided a period of unparalleled growth. "One of the major growth engines for AMEC in Saskatchewan has been potash due largely to the high demand for the mineral. Over the last 10 years we have been involved in a number of large potash expansion projects and now also front-end services for new greenfield potash mines over the last decade," said Will Brandsema, vice president and general manager, mining and metals, AMEC. "Our expertise also covers other minerals, gold, and base metals, but our key driver for growth over the past five years has been in potash."

Being a global hub for potash production has also seen many companies export their expertise around the world. "AMEC provided the EPCM services for PotashCorp's recent expansion program involving a large number of projects, some valued at more than \$1 billion. The larger projects commenced in 2007 and are near completion. In Saskatoon, we have a consulting group with world-class potash and uranium expertise who



Graham has successfully completed numerous projects at PCS' Cory facility.

# Saskatchewan Proud



In today's Saskatchewan, mining is coming to the forefront of what has traditionally been an agricultural economy. In the last 15 years the province has seen a steady increase of growth in the mining sector.

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**MINING IN SASKATCHEWAN**

provides expertise to other projects around the world,” said Brandsema. “Through our Saskatoon office, we have been engaged on different potash projects in Africa, Australia and Central Asia,” said Labbe.

It has also been interesting to note the expertise also being brought into Saskatchewan from other potash jurisdictions around the world. “Hatch had worked globally in potash before, though not within the province. We had completed potash work in Jordan, and we brought that expertise to the Mosaic projects,” said Mike Fedoroff of Hatch.

High levels of salt present in the province requires constant attention from the service sector. “The potash producers share a common challenge, which is salt-induced corrosion. Corrosion degrades hoisting and materials handling infrastructure, which then necessitates renovation approximately every 10 years. Stantec is working with producers to renovate and /or modernize their operations,” said Rich Saccany, senior consultant, mining, Stantec Consulting.

This has resulted in a number of key services and innovations required by the EPCMs in the province. “There had not been much advancement in the basic machinery and industrial processes used to manufacture and process potash in the past 30 years... The greatest innovations



PCS Rocanville West Expansion, Rocanville, SK - Rocanville includes over 20,000 tons of steel, including fabrication and erection of support buildings and loadout. Photo courtesy of Supreme Steel.

that have occurred are in shaft lining designs and sinking techniques. The shafts are the most risky part of new mine development, especially in Saskatchewan due to the water-bearing formations. While that technology has evolved elsewhere in the world, those applications have not been tested or tried against the Blairmore formation – a unique geological feature of Saskatchewan which is like quicksand,” said Hatch’s Fedoroff.

Viewing these EPCMs and service providers as partners proves invaluable when planning for mine lives that may exceed 100 years. “Sustainability has never been a focus

in the mining industry. It is a difficult issue because all companies are looking for returns on investment, which are tough to show when you are looking at ways to save energy and conserve,” said Jason L. G. Mewis, president and senior engineer, ENCOMP. “To see benefits to your bottom line, you have to be innovative at the engineering stage. You also have to view engineering firms as partners, not just required commodity service providers. Energy capture/ conservation, and reducing consumption of inputs, should be considered to have just as significant of an impact on the environment as the risk of many other environmental impacts currently being assessed. However, these things will be tough to realize until our clients make the decision to invest in sustainability by giving consideration to the whole life-cycle of assets.”

These environmental considerations are essential to progressing projects within the province. “No mine will be permitted today without environmental plans going right through beyond closure. You cannot ignore the ongoing review process jurisdictions across the world subject their operating licenses to,” said Labbe of Worley Parsons.

Others have brought key services under their umbrella to ensure full project control. “Completed in December 2011, Graham was the general contractor on the Potash-Corp Cory Facility Red Product Expansion. It was our responsibility to help them increase their capacity to 2.2 million mt/y and we covered this from a number of angles such as mechanical, civil electrical, structural and also on the surface work of their brownfield expansion. One thing that is quite unique in Graham that we engaged for the Cory Red project, was our in-house steel fabrication. This, combined with our unique technologies and integrated delivery team, differentiates us from other construction companies,” said June Verhelst of Graham, a local Saskatchewan success story in itself. Bringing unique innovations, technologies and global exper-

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tise to the province, the growth to come appears to be well supported.

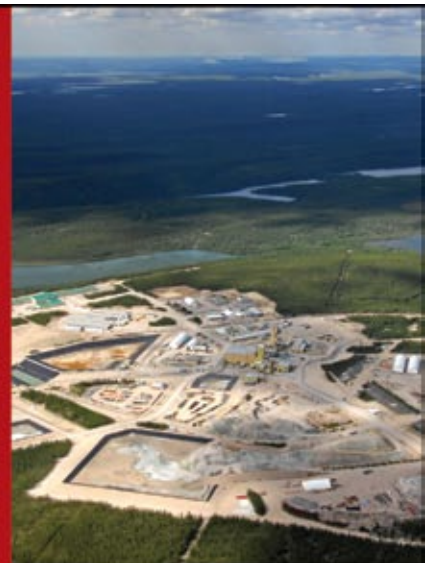
### Local enterprise – the Saskatchewan ‘can-do’ attitude

Prior to the entry or return of many of the national and international companies now seen in the province, local ingenuity and innovation was required to meet the challenges of the day. Cory Rousell, operations manager, GMR Electric Motors, said: “When working in these harsh conditions you are forced to develop your own solutions to problems. As a result, [Saskatchewan] has become a hotbed for prototypes.”

With historic lows of -56° Celsius, and winds which can reach up to 140 km/h, it often takes the local experience and knowledge to overcome these potential challenges. “Saskatchewan’s mining industry operates under unique conditions where weather is a regular operating factor. We do not shut down operations until extreme weather conditions persist. In terms of erecting the steel, wind poses our greatest operational challenge. We lose more days of work to wind than any other element,” said Ross W. Fraser, general manager and senior vice president, Supreme Steel Saskatoon. Tackling these challenges, while seeing growth and success, proves these providers can step up to the challenge. “When we take on projects, we manage our own erection of the steel and control all aspects of the project in-house. We currently have a 25,000 mt job we are about to start and there is no other company in Canada that can successfully manage a project of that size,” said Fraser.

With the number of firms growing, there is a competition for skills. “The mining supply companies in the Saskatoon area have typically grown up from entrepreneurial firms that started operating 30 to 50 years ago supporting the potash or uranium industry. There has been significant growth in the market over the last several years but companies are always challenged by their ability to hire top talent in both trade and management positions,” said Alan Migneault, senior consultant, PricewaterhouseCoopers LLP. This new competition did not always enter without its own set of challenges to local service providers. “Competition came into Saskatchewan to secure new business undercutting established companies in the province... These companies were specialists in their respective fields and did not possess the diversity to service the specifications required [in the province],” said Jim Nowakowski, president and general manager, JNE Welding.

Some local companies have found their niche, and are exporting these skills around



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the world. "Only three companies globally write 43-101 reports for potash... Since we are located in the top potash area in the world, we are the first phone call that many companies make when acquiring projects in Saskatchewan... Internationally, North Rim has worked in the United States, in Asia (Laos), Europe, South America (Brazil) and Australia," said Karri Howlett, president and CEO, North Rim Exploration.

Transport solutions are also another area where Saskatchewan has shined and helped solidify skilled labor in the provinces more remote regions. "We were flying a number of executives at the time when the situation was changing in northern Saskatchewan, where mining companies had been building towns around mine sites. That model did not always suit the needs of the company or their employees, so West Wind Aviation began a fly-in/fly-out model, serving the different mine sites," said Gord M. Gillespie, president and CEO, West Wind Aviation. "Our clients needed to attract and retain a skilled work force without necessarily creating communities in the challenging geographic areas of the far north, so the concept of flying-in and flying-out their crews was something that served them well," said Dennis Baranieski, vice president of business development and customer relations, West Wind Aviation.



West Wind Aviation ATR 42 serving the North. Photo by Pat Gould, courtesy of West Wind Aviation.

Locally sourced ingenuity and support, whether by home-grown companies or international firms, will ensure that the mining industry can continue to focus on their bottom line.

**Conclusion**

With key initiatives in education, training, and even the province's professional football team, the industry appears to be doing it right in Saskatchewan.

"The mining industry is responsible for the development of the community where mining sites are located, building infrastructure, including roads, water treatment, hos-

pitals, medical centers, that will benefit the local community. The mining industry does not receive the recognition it deserves of being a good corporate citizen," said Douglas J. Kramble, vice president, mining and minerals, Tetra Tech.

As concerns of royalty regimes, the availability of skilled labor and power linger in the current environment, Saskatchewan's outstanding resources, and the activities and ingenuity of the industry developing and supporting the mining industry continues, Saskatchewan's bid to become one of the world's leading mining destinations may soon become a reality.



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# Manitoba

## Manitoba miners remain optimistic despite permitting delays and poor nickel prices.



The recent discovery of a 2 million plus ounce gold deposit within a kilometre of San Gold's Rice Lake mining complex is just one example of the province's vast untapped exploration potential. Photo courtesy of San Gold.

While Saskatchewan is enjoying international investor interest and a renewed sense of relevance on the world resource stage, Manitoba faces a number of obstacles on its path to becoming a 'have' province. Lack of buoyancy in the capital markets has seen juniors rely on flow-through shares leading to share dilution, which in 2013 will result in either de-listing or a rolling back of stocks, as Wildcat Explorations did at the beginning of 2013. "Some companies in the mining industry may be de-listed or will otherwise struggle in these difficult market conditions. As companies run out of resources they may decide to sell off or joint venture their assets. I have also been told that many public companies have adopted

"low-burn" strategies to preserve capital until market conditions improve," said Norman Snyder, managing partner at law firm Taylor McCaffrey LLP.

Though financing difficulties have affected juniors globally, this disadvantage has been compounded in the province by another, equally damaging obstacle: Lagging permitting times and engagement with First Nations. Once a Fraser Institute darling, Manitoba has fallen consistently through the rankings to ninth and then twentieth. However, Manitoba is mining country through and through, and the revenue that the sector brings is the life-blood of many of its communities. "It is often said that

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for every job in mining, there are three to five jobs that come with it ... Mining is, has been, and will continue to be a strong economic pillar in the community," said Ryan Land, manager of corporate affairs for Vale Canada Ltd.

As a result of Manitoba's strong mining culture, the human resource potential of the province is strong. Across the value chain, rather than being defeated by the pessimism of the times, the sector has been characterized by the ability to adapt to challenges in the form of strategic partnerships, R&D activities, and the lowering of capital costs by focusing on brownfield properties with infrastructure already in place.

### First Nations: License to drill?

Key to the development of the region is the ease to do business. Drill permits—including for exploration—require companies to consult with First Nations communities. The importance of collaborating with communities cannot be underestimated; in 2008, Victory Nickel's permit to drill a bore hole was revoked by provincial government after Norway House Cre Nation objected due to lack of consultation. "There is a lack of clarity regarding who is responsible for what, who the major stakeholders are, and how to move forward when an issue arises. Mineral exploration or extraction carries a risk, and if you add the uncertainty about which level of government to deal with, it makes things even more difficult for companies," said Donn A.J. Pirie, partner at Taylor McCaffrey LLP.

Yvette Hawkes, co-founder of local GIS mapping company Zone 14 and Grassroots Syndicate Inc, also noticed the impact on her clients: "Manitoba has a permitting problem: There are many projects that have promise but are on hold due to permitting issues ... The province has great potential, but some of these issues need to be ironed out, because everyone suffers if the permitting process is stalemated."

Robert J.M Adkins, specialist in aboriginal law at Thompson Dorfman Sweatman, highlighted that while the duty to consult is at times complex, progress is being made. In addition, in a different economic climate, mining companies would be better able to absorb any potential cost and risk; the underlying issue therefore remains access to finance. "Manitoba has progressed in how it addresses these issues, and the draft policy regarding consultations is a step in the right direction ... However, these issues are also cyclical; when the industry is not doing as well it is harder to receive money for development," Robert Adkins said.

Though the government has caused some consternation with regards to First Nations issues, this risk is to an extent offset through support via financial channels. The Mineral Exploration Assistant Program (MEAP) is an important tax incentive that "compensates you for a portion of the exploration dollars that you invest underground. Flow-through-shares earn an investor residing in Manitoba a 150% tax credit on every dollar he or she invests. Manitoba has the second highest tax incentives in Canada, second only to Quebec which has a 180% tax credit," said Amir Mousavi, CEO of Bison Gold Resources.

A second and more important way in which First Nations issues can be mitigated—and even turned into a boon—is through mutually beneficial training and skills development schemes. Symptomatic of a wider human resource shift as the large cohort of the Baby Boomers give way to the smaller cohort of generation Y, in the next four years 60% of professionals in the Canadian mining industry are due to retire; it is the perfect opportunity to engage with local and aboriginal communities in Manitoba. "Aboriginal communities have the potential to fill the large workforce gap in Canada when the mining industry booms again. However, it will also be up to the individuals' willingness to transition and our ability to create a successful platform to facilitate this. The aboriginal communities are voicing that they want to be a part of this trend, but the companies still do not really know how to involve them. Significant progress will still be required," said Jamie Saulnier, president of Running Deer Resources.

A step forward in engaging with First Nations and local talent in Manitoba is firstly to address the lack of understanding of the sector. "As developers recognize the value of early interaction with the communities or regional stakeholders—whether they be Aboriginal or otherwise—they start to see the value of where engagement can pay off down the road. Ultimately, the acceptance and support of projects is a matter of understanding. More and more, we are seeing examples where those relationships have not been effectively developed. When, for whatever reason, the project faces challenges, developers are unable to draw upon stakeholders for support or input. In the worst position, developers can find themselves in conflict with local stakeholders, which is never a good framework for anybody. Effective relationships, developed early on, can provide a positive foundation not only through the development process, but after-



The hoisting system in the main ventilation shaft at Hudbay's Lalor project is now capable of hoisting 1,400 mt of combined ore and waste per day, with completion of the production shaft and new concentrator expected in late 2014. Photo courtesy of Hudbay.

wards during operations," John Osler, president of InterGroup Consultants explained.

Giselle Schween, co-founder of Zone 14 and Grassroots Syndicate Inc., underlined that more can be done in schools to increase awareness among the next generation as to the positive aspects of the industry—mining's commitment to CSR, safety, and sustainability, and the array of career opportunities—to offset misinformation about the industry. "The public still has a very negative perception associated with mining, and there is an important role to be played for educating the public," she emphasized.

A second issue is the lack of skills, which poses a barrier to entry into the job market for surrounding communities. The successes of other provinces in creating partnerships centred on training provide useful case studies for the province as it seeks to define its own approach. Roy Slack, president of Cementation, an engineering and mine construction firm, offered an example of a successful partnership: "[We] established Kitikmeot Cementation Mining and Development (KCMD), a partnership between Kitikmeot Corp. of Nunavut and Cementation Canada Inc. We have a long term relationship with them that is

working very well, and are currently looking at a third project with them. We established a New Mining Training Program, which is an opportunity for people with no exposure to mining to become involved in underground mining work."

As Slack highlighted, training represents a vital piece of the Mining/First Nations puzzle. Employment opportunities not only share revenue in the way equity sharing schemes do, but actually equip individuals with the skills to generate revenue themselves beyond the life of the project. Regardless of the initial time and capital investment in engaging with local communities, it quickly becomes apparent from both a human resource and business perspective just how advantageous a local workforce can be. "We were losing roughly 80% of people that we hired from outside the region within the first two years ... When we hire inside the region, almost the opposite is true—we retain people closer to 75% of the time. The problem was a skills gap: we had upwards of 30,000 people in the region who wanted employment, but we had highly-skilled technical industrial jobs that they were not necessarily ready to take on," Land of Vale explained.

The key is investing in training schemes that lead to meaningful, full-time employ-

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ment within or near to the employee's community. In addition to training, innovation through investment in new technology is a method of circumventing skill shortages that typically prevent engagement with local communities and First Nations. "We have hired employees with zero initial skills, and trained them to become great workers. In order to mitigate labor retention problems and the consequent potential dearth of experienced operators, we have in addition invested in newer and smarter equipment that requires less skill to be operated successfully," said Rod Cyr, president of Rodren Drilling, a Manitoba-based diamond drilling company. "At least 50% of our people are from First Nations communities, largely as a natural consequence of wanting to hire locally."

The significant initial investment in developing a skills base among the local workforce is repaid in full through securing vital local support, a stable talent pool available at short notice, and little or no costs involved in reaching the mine site.

### Safety in Manitoba

31% of the respondents of Ventyx's most recent Mining Executive Insights survey identified safety as an area of concern, ahead of capital project management



Flin Flon drill. Photo courtesy of Rodren Drilling Ltd.

(25%) and production efficiency (21%). Canada has been recognized as consistently maintaining a world standard for safety, and Manitoba is no exception. "Mining companies have changed from paying lip-service on health and safety standards to a transition point of implementing a tangible health and safety plan drawn up by boards of directors," said Barrie Simoneau, director of risk management of the Mining Association of Manitoba Inc. "With the adoption of a structured health and safety culture by Manitoba's mining industry, in the last 12 years its diamond drilling, contract mining, and operating mines have suffered one fa-

tality within approximately 100 million exposure hours."

In particular with complex underground mines, safety must remain a top concern and it is these specific safety challenges that have spurred innovation in the sector. "In northern Manitoba in 1994, mine workers took refuge in an underground refuge station. The air line supplying breathable air to the refuge station was severed in the fire, and rather than supplying breathable air to the refuge station, the line began sucking air out of the station when the air valve was opened. Fortunately in this incident, the workers were rescued safely, but the industry learned a valuable lesson: namely, that a secondary source of breathable air to the refuge stations was needed. Being made aware of this critical incident by the local mining association, RANA embarked on a R&D project and developed the Refuge One Breathable Air Center. The RANA Refuge One system re-processes the air inside a sealed mine refuge chamber by removing the carbon dioxide and replenishing the oxygen," said Randy Waylett, sales manager of RANA Mine Refuge Systems. This Manitoban innovation has since been exported to mining markets the world over, as well as within Manitoba itself.

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### The junior market: survival of the richest

It is with these challenges in mind, and despite the base metals market having been hit hard with the drop in nickel prices, that the mining sector in Manitoba has nonetheless been able to push forward with the exploration of several key deposits. The primary causes for positivity come from either multi-commodity deposits that mitigate the risk of price fluctuations—in particular as copper remains strong—and indications of large deposits which allow for a certain economy of scale. As a result, some juniors in the area have continued exploration ac-



RANA's Refuge One Breathable Air Centres provide an alternate source of breathable air inside sealed Refuge Stations. Photo courtesy of RANA.

tivities with a sense of cautious optimism. Paul Jones, Victory Nickel's vice president of exploration, explained: "Our Minago property is 400 km north of Winnipeg and is one of the biggest undeveloped nickel deposits in Canada with a 50 million mt resource. Victory's Mel property is a copper project near where Vale Inco has historically had its operations, and as the result of an acquisition a few years ago, the company acquired the Lynn Lake project, which is a past-producing nickel mine with existing unexploited resources. Those three properties and the Lac Rocher project in Quebec combine to give Victory about 1 billion lb in

resource nickel in total, which for a junior is a very significant figure. In the course of our exploration, we have in addition discovered a frac sand opportunity. Of the 140 million mt of overburden, 15 million mt is frac sand."

As both commodity prices and mining itself are cyclical in nature, future success depends on current investments being positioned for the eventual upturn. It is presumably with this in mind that Mustang Minerals announced in February their NI 43-101 compliant resource for its Mayville Deposit of 24.3 million mt at 0.45% copper and 0.19% nickel (0.69% copper

equivalent). This estimate is in comparison to its resource estimate of 2010, in which the indicated resource announced in 2010 was 11.6 million mt at 0.55% copper and 0.21%.

"Our goal is to strike a balance between exploration and moving the projects forward in terms of economic development. We hope to get a scoping study done this year on this mine project, but we also want to make another significant discovery. Exploration is what gets people's attention. The trick to making discoveries is having enough prospective ground to explore on. Mustang Minerals has a very large area of ground tied up for the next 10 years at a very low cost. When we started a few years ago we had no resource base and now we are closing in on 40 million mt of copper nickel resource / reserve," Mustang Minerals' president and CEO Robin Dunbar explained.

In contrast to nickel, as economic uncertainty continues, investors will remain attracted to gold and its reputation as a 'safe' investment. Predictions abound—from Barwick through to commodity analysts—that 2013 will see gold reach highs of \$2,000/oz. As a result, the junior market has been slightly more buoyant than their base metal peers. Juniors who have long-term survival in mind in Manitoba are positioning them-

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selves for the commodities super-cycle upturn in advance, and part of this strategy is a focus on the geology behind mining to make future drilling investments as informed as possible.

Glen Kuntz, interim CEO and president of Mega Precious Metals, offered the Monument Bay camp as an example: "In early 2011, we partnered with the University of Manitoba and developed a research arm with a professor and a masters student. The reason for this partnership was that we had to create a geological framework for the deposit, as we had a very poor understanding of it at the time. It turns out that it is a pull apart basin. By building a geological framework, we were able to determine a lot of the controls for mineralization. In part, we identified a new type of mineralization, tungsten. We now understand that we have a gold and tungsten deposit, of which there are very few in the world," he said.

Though the time-frame remains unconfirmed due to financing difficulties, QMX is in the process of advancing the development of New Britannia mine at Snow Lake, which as a past-producing mine already has mining leases, a portal and a production shaft. "At the moment, we are mainly working on data compilation, taking old records

and adding them to the database, and using more sophisticated programs for mine modeling. This has proven to be useful because we are determining a lot more targets which will help us extend the life of the mine," said Gerald Thornton, vice president, Manitoba operations, QMX Gold Corp.

Juniors seeking to become producers are in a slightly better position relative to other juniors with less developed properties, due to the shorter time-frame between initial investment and eventual returns. Manitoba is at a particular advantage in that it has the type of deposits that can quickly become producing mines. "In Manitoba (when considering base metals) the exploration companies are searching for very high grade volcanogenic massive sulphide (VMS) deposits. These deposits offer a much shorter time frame from discovery to production, and capital expenditures associated with these deposits are a fraction of cost. Hudbay Mineral's Lalor Lake discovery, for instance, is 14 million mt of very high grade zinc, copper and gold, which was discovered in 2007 and is currently scheduled for full production in 2014. Seven years for a junior exploration company to become a producer is very attractive," said J.J. O'Donnell, president and COO of Callinex Mines.

Thanks in part to their \$2 million joint venture with Hudbay on the Reed deposit, VMS Ventures is financially healthy and offers proof that it is still possible to thrive in the current market: "VMS Ventures has approximately \$10 million in its treasury. We will spend about \$1.2 million this winter on our 100% owned properties... At the end of 2010 and 2011, we raised \$5 million and \$2.5 million in flow-through funding. Financing was done at substantial premiums to the market price, so were not too dilutive," said Rick Mark, CEO and chairman of VMS Ventures.

### Producers in Manitoba

Manitoba's key producers are well-established players that have been in the region in their various forms since the early twentieth century: Hudbay has had a presence since 1927 and Vale since the 1950s. The success of Hudbay and Vale are strong contributors to the overall success of the province's economy. Jim Kilgour, project manager, structural at Hatch, identifies Vale as an "anchor client," however at the moment the key wealth-generators of the province are under pressure.

The emphasis on producing mines is on cost reduction through increased operational efficiency. Todd Thompson, regional director mining for Hatch Mining explained: "With the global economic uncertainty most companies are limiting their capital spending and looking for ways to improve maintenance, increase productivity, and reduce costs. In the near term our focus is to reinvigorate our long standing operational support offering to our clients to align with their current business needs. We have the project systems and tools, the staff, the experience and the knowledge to help companies improve their operational plans and support their sustaining capital requirements."

While Vale envisions a future for itself well into 2040, the company has shied away from its previous strategy of diversification and—in line with the global trend—is now focused on lowering capital costs, leaving the Birchwood mine under threat of closure.

Hudbay Minerals on the other hand, is primed for a significant period of growth at a time when other players are shying away from risk. "By 2015, we expect a 390% increase in copper, 115% increase in precious metals and 30% increase in zinc. We will grow from being a small mining company to a mid-tier producer. By 2015 our growth initiatives will start to pay off, and this will be a leaping board for future proj-



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## An interview with Hon. David Chomiak, Minister of Innovation, Energy and Mines on mining in Manitoba and the ways in which the provincial government can support the industry.

### Manitoba's history in mining begins with Hudbay's presence in the 1920s. What makes Manitoba an attractive mining jurisdiction?

Manitoba has solid infrastructure, but its best asset is arguably its steady and well-established workforce. We are also consistently ranked as a top jurisdiction for our tax regime.

Our export Investment Tax Credit and our mining taxes, which are based on profits on a percentage basis, are highly competitive. About 6% to 7% of our economy and 13% of our exports are derived from mining.



### Manitoba's economy is predicted to grow 4% this year. What is the role of the mining sector in encouraging growth in Manitoba?

Mining and petroleum generates \$3 billion per year as well as 6,000 direct jobs and 18,000 indirect jobs per year. Commodity prices are not at their best at the moment, and although gold prices are still high, our biggest commodity, nickel, is not trading very high. That said, once nickel prices rebound we will see even more development.

Manitoba has always been the last to go into recession and the last to come out. We experienced the recession in 2009 and 2010 but managed to bounce back in 2012, and we expect to come out even better over the next few years. With the Lalor project, SanGold's expansion and Reed Lake, I expect to see significant growth in 2013. As a government we work collaboratively with companies, which is another aspect that makes the jurisdiction attractive. We have a steady, consistent approach to how we work with companies.

### In terms of permitting to production, what is the typical time-frame for a mining company in Manitoba?

The permitting process is not as fast as it should be. The process should take 90 days, but in the last year and half we have not been as fast because of re-evaluating our consultations processes with First Nations.

### A number of projects have been delayed, such as QMX and Victory Nickel. How has the drop in commodity prices affected investor interest?

ects. We are on the cusp of something that is unique, and we will continue to develop," asserted Brad Lantz, vice president of Manitoba Business Unit for Hudbay Minerals.

Producers have been focused on self-funding through streamlined operations that allow profit to be re-directed back into exploration and development, and this is especially true of gold producers able to benefit from the current gold markets.

George Pirie, former CEO of San Gold, said: "Market conditions have been very difficult in the past couple of years. Our shareholder value will be grown by running a safe operation and executing our plan. We have an excellent land position with tremendous exploration upside and we feel we are just beginning to unlock the potential of the property."

"Our goal is to drive our cash costs down. The key is to remain productive even if gold prices drop several hundred dollars. A lot of our competition would not be able to stay in operation, but we want to be able to survive. We need to make sure we have the optimum run rate for the operation and that we continue to attract and retain skilled people who want to be here," added Ian Berzins, recently appointed president and CEO of San Gold.

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