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COVER PHOTO
Mining supply chain companies provide services ranging from construction and earth moving to equipment manufacturing and environmental services to Saskatchewan's mining companies. Many suppliers assisted with the construction of K+S Potash Canada's Legacy mine, as seen on our cover.

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A MESSAGE FROM SMA PRESIDENT, PAM SCHWANN

MINING AND THE SUPPLY CHAIN

While headframes and draglines are visible signs of mining operations across Saskatchewan, the mining supply chain sector is a less visible but vital link in creating a successful mining ecosystem.

The economic impact of mining reaches beyond mineral extraction and processing. Mining is linked to many other industries and sectors in the economy, including transportation, construction, equipment manufacturing, environmental management, geological and geophysical services, the financial sector, education and research, among others. However, there is limited information and understanding of the size, scale, composition and economic importance of the mining supply and service sector in Saskatchewan because it is not directly measured or tracked by the government due to overlaps of serving other sectors as well. As a result, a significant part of the contributions of the mining sector — including the supply chain — are “hidden” from economic contribution studies.

Anecdotally, Saskatchewan mining companies understand that a vibrant, local supply and service chain sector offers a competitive advantage for them. This is the primary reason the SMA, in partnership with the Ministry of the Economy, initiated the Saskatchewan Mining Supply Chain Forum, now in its ninth year.

Local suppliers and providers of services understand the details of a mine operation, and often tailor their products and services to the unique needs of local mining operations. They can also provide more timely and responsive service. The close relationship between mining companies

and suppliers has been facilitated by organizations, including the North Saskatoon Business Association (NSBA), Saskatchewan Industrial and Mining Suppliers Association (SIMSA) and the local Canadian Institute of Mining and Metallurgy (CIM) chapters in Saskatoon and Estevan.

To get a better understanding of the significance of the mining supply chain sector, the Saskatchewan Mining Association joined with the Ministry of the Economy and SIMSA to study the Saskatchewan mining supply chain sector. This edition of ORE provides insight into the results of the mining supply chain study, from the value of supply and services purchased, to the number of employees in the sector. The study also identifies the various “hotspots” within the province that provide service hubs, and the growing role of Aboriginal-owned businesses within the supply chain sector.

While this study didn’t capture the entire Saskatchewan mining supply and services community, it does provide a minimum economic footprint of the sector, as well as gaps in the supply chain that may represent local and global growth opportunities for companies. Ultimately, the relationship between mining companies, and suppliers is symbiotic — each benefiting from the others’ success. And when that happens, all communities — rural, northern, urban and Indigenous — also share in the success. 🌱

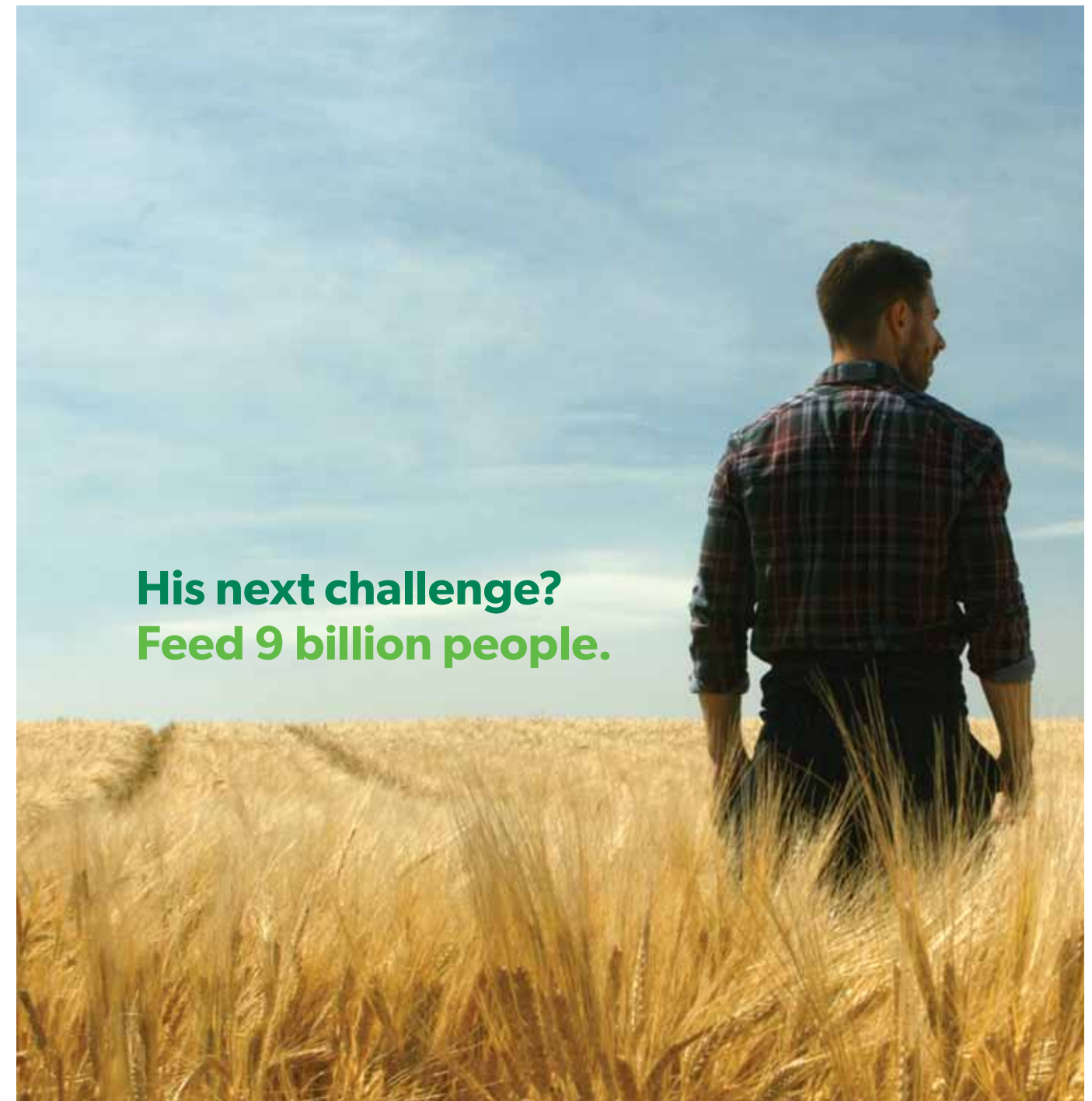
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Saskatchewan mining supports one of the best supply chain clusters in Canada

Survey shows significant economic impact across the province

In late 2016, an important economic survey conducted for the Saskatchewan mining industry proved what the sector already knew was true: the province is home to an extremely strong supply chain, and the economic spin-off from mining is enormous.

The key finding of the survey was that Saskatchewan mining companies purchase well over a billion dollars in goods and services annually from local suppliers. In 2014, purchases were worth \$1.7 billion; in 2015, \$1.8 billion; and expectations are for \$1.4 to \$1.65 billion through 2019. In addition, the 196 suppliers that responded to the report had 14,300 direct employees in 2014.

The survey and its final report, entitled "Economic Impact Analysis of the Saskatchewan Mining Supply Chain," were prepared by Praxis Consulting, and funded by the Saskatchewan Ministry of the Economy, The Saskatchewan Mining Association (SMA), and the Saskatchewan Industrial and Mining Suppliers Association (SIMSA).

Pam Schwann, President of the SMA, said the Saskatchewan mining sector has been serviced by an innovative and reliable supply sector that has largely developed in response to some relatively unique mineral deposits, notably potash and uranium, which presented distinct challenges.



Mosaic Co. K3 headframe

Among those challenges were sinking shafts to ore through a quicksand-like layer (the Blairmore Formation), remote mining techniques for high-grade uranium mines that provided radiological protection for workers, continuous mining machines and protective coatings to address highly corrosive environments. Suppliers have also created and manufactured a vast number of built-for-purpose mining machines and vehicles.

"The mining supply and services sector (MSS) is a large, important and growing sector of Saskatchewan's economy, with the opportunity to expand the footprint beyond Saskatchewan and Canada's borders," said Schwann.

Larry Long, SMA Director and General Manager of PotashCorp Rocanville, agrees. In his view, "Saskatchewan has one of the strongest fabrication and manufacturing sectors serving the mining industry in Canada."

However, the MSS sector has not been tracked or measured in a systematic way. That gave rise to the survey initiative.

The MSS is a "hidden" sector in that it is not directly measured or traced due to overlaps of serving other industries, Schwann explained. Statistics Canada doesn't track the sector at a level that measures the interrelationship between the mining sector and its supply sector.

"This limits the understanding of the symbiotic relationship, between these two industries; and the government doesn't have the information to assess how the sector is performing, or to develop appropriate investment attraction policies for these industries.

"We wanted to quantify the contributions of this sector and better understand its scope and scale through this study."

In addition to estimating the MSS economic contributions to Saskatchewan, the goals were to develop a profile of the supply chain, including where the businesses are located; and identify growth opportunities for the sector.

Jim Nowakowski, President and CEO of JNE Welding Inc. in Saskatoon and chair of SIMSA, described the mining industry's support of the industrial supply chain as nothing short of critical — and he had some additional numbers to share.

"Our Saskatchewan supply chain has developed over the past 50 years and continues to grow and develop here largely because of the mining industry," said Nowakowski.

"If you have an active or even stable industry, the local supply chain will develop and grow in concert with the industry. Here in Saskatchewan, the mining industry is responsible for developing at least 70 per cent of the industrial supply chain we have today."

He compared that to Alberta, where the oil industry is almost solely responsible for developing the supply chain and associated infrastructure.

"The development of a healthy local supply chain is very dependent on local industry," he said. "Once companies establish themselves and become successful, they are then able to pursue markets outside

Once companies establish themselves and become successful, they are then able to pursue markets outside of Saskatchewan as many of our industrial companies have done and continue to do.

**JIM NOWAKOWSKI,
PRESIDENT AND CEO
OF JNE WELDING INC**

of Saskatchewan as many of our industrial companies have done and continue to do.

"Without the support and opportunities our Saskatchewan mining companies have provided us, our supply chain companies would not have developed the expertise or the capacity to take advantage of these additional opportunities. This is a critical component to the Saskatchewan growth plan. We need to continue to foster our growth here in Saskatchewan by leveraging our expertise that we have developed serving our mining industry.

"Without a strong mining sector in Saskatchewan I would venture to say at least 70 per cent of the supply chain as we know it today would cease to exist here is Saskatchewan. In fact, it could be more significant than that, as the remaining industries would likely be serviced by companies from outside

our region, making it very difficult for the remaining 30 per cent of the Saskatchewan supply chain to remain viable."

Mining down to the details

The survey showed that suppliers self-declared (minimum) revenues of \$1.1 billion from the mining industry, based solely on those responding.

Purchases from Aboriginal-owned suppliers was over \$350 million per year for the survey period (2014-2016), representing approximately 26 per cent of the total mining operations spend and 19 per cent of the new capital project spend.

Schwann said the SMA was pleased with the Aboriginal supplier numbers, but that the organization sees them as baseline numbers to move forward with.

"Northern mining companies have been working with northern communities and businesses for decades to cultivate and develop a variety of suppliers and service providers from northern Saskatchewan," she said.

"From discussions at kitchen tables about one-truck, gravel-hauling operations that have grown into multi-million dollar, interprovincial transportation and logistics companies, reminds me of the saying, 'we've come a long way, baby.'"

"We are now seeing many of the northern businesses partnering with other companies and Aboriginal economic development agencies in the south to expand their business reach. We are also seeing very strategic procurement policies by mining companies in the south to foster the development of suppliers that are connected to Aboriginal communities."

The survey also found that purchases for operations are forecasted to continue at an average \$1 billion annually to 2019. However, procurement related to new investment is expected to drop from about \$700 million in 2014 to under \$400 million in 2019.

The survey also looked at what supply sector would have the most significant impact on Saskatchewan job creation, increased labour income and GDP boost.

An increase in the manufacturing supply sector was determined to have the most significant impact. It has a larger labour income multiplier because the sector has significant purchase inputs to support the manufacturing process. The professional services sector has a lower labour income multiplier because it is primarily engaged

in activities requiring few inputs other than human capital.

"Compared to other sectors, I think the mining industry is very committed to supporting a Saskatchewan mining supply chain and makes conscious efforts to cultivate local suppliers," said Schwann.

"However, the bottom line is the bottom dollar and mining companies need to ensure they are achieving the most cost-effective means of operations to ensure their global competitiveness.

"This study allows us to measure the procurement source information over time, and see where there are opportunities for increased procurement from Saskatchewan-based companies, including Aboriginal-owned companies. It also provides insight into gaps in the local supply chain that offer an opportunity for a new supplier, or an existing supplier to expand into. From an operational standpoint, if you know a company provides a quality product and offers quality service at a competitive price, it will be a preferred supplier."

The Supply Chain Forum

An important part of connecting mining companies with their suppliers is the annual Mining Supply Chain Forum, originated by the SMA and the Ministry of the Economy and most recently in partnership with SIMSA. "When the Mining Supply Chain Forum started in 2009, the industry was just starting a massive capital expansion," said Schwann. "The premise for the forum was that Saskatchewan mines would be more efficiently served by a local supply chain.

"So, we looked at ways to achieve that. We wanted to capitalize on the expansion opportunities as well as ongoing operations. A forum for mining companies to communicate their needs, along with information about the increasingly complex procurement processes that suppliers needed to follow to become a preferred supplier was identified by both the companies and suppliers as providing value to each.

"We subsequently added a trade show component to the forum so suppliers could demonstrate their products and services to mining companies, and to EPCMs that were managing the large capital expansions."

The relationship between mining companies and suppliers is critically important, and both sides work to foster it, said Schwann.

"The forum has grown to be Saskatchewan's and likely Western Canada's largest annual mining show. While it is a focal point, other networking opportunities between suppliers and mining companies, like the active Saskatoon CIM branch (Canadian

Institute of Mining, Metallurgy and Petroleum), North Saskatoon Business Association and SIMSA strengthen the symbiotic relationship. If the mines are doing well, the suppliers are doing well, so our associations will continue to work together and support each other wherever possible — through venues like the Mining Supply Chain Forum, industry studies, or Mining Week events that profile the depth and diversity of the mining sector in Saskatchewan."

Keith Moen, executive director of the NSBA, said the importance of the mining industry to his association's members, and to the overall Saskatoon and Saskatchewan business community, cannot be overstated. Events like the Mining Supply Chain Forum are very important to those members, he added.

"There is a multitude of businesses that have, over a period of time, built very successful enterprises based on the growth, development, and quite importantly, on the maintenance of mining operations in Saskatchewan.

"I think this track record and history is a very big reason behind the success of the SMA's Supply Chain

Forum. The companies that are already involved in this service and supply recognize the value of maintaining those relationships with their existing customer base, with an eye towards possibly expanding their market share. Meanwhile, those that are hoping to penetrate this market easily recognize the potential that it could mean to their business. The growth of the Forum, I think, speaks volumes to the value that the business community sees in Saskatchewan's mining industry."

Nowakowski noted that the relationship withstands less buoyant economic times, to the extent possible. As the survey numbers indicate, recent low commodity prices have in part reduced the



activity for the supply chain.

"The value or importance of a strong mining industry has an impact on every Saskatchewan resident regardless if they work directly in the mining industry or as part of the Saskatchewan industrial supply chain," said Nowakowski.

"Our industrial supply chain companies have numerous challenges and even threats. Perhaps one of the most significant is the reality of tough global competition. Although we aren't always able to compete with the lowest initial price for our products and services, I am convinced that our SIMSA members are able to provide the best total value.

"We can do this by using our local knowledge and experience acquired by working within the mining industry. We know what is not only required but also what is expected. Our mining companies benefit from our local supply chain, by receiving the best of quality in our products and services, delivered with safety at top of mind as the number one priority."

Read more about the geographical diversity of mines in rural and remote Saskatchewan, and the presence of suppliers supporting those mines, in the feature story.



The Mining Supply Chain Forum is a crucial connection between mining companies and the companies that supply them with products and services.

Q&A

WITH **LEANNE BELLEGARDE**,
POTASHCORP DIRECTOR OF DIVERSITY
AND INCLUSION

PotashCorp has created a document spelling out its commitment to boost Aboriginal participation in its supply chain. The Aboriginal Content Playbook, or "Playbook" for short, explains PotashCorp's expectations for suppliers and outlines how they too can create sustainable impact in this area. The company's Leanne Bellegarde explains why the Playbook was developed and discusses the impact it's had so far. The document can be viewed at potashcorp.com/about/procurement.

Q: What is the Aboriginal Content Playbook?

A: PotashCorp made a commitment a number of years ago to include Aboriginal people in all of our opportunities. Our first priority was employment; that was six years ago when we were finishing up mine expansions and doing a lot of direct hiring.

While hiring continues to be an important part of our focus at PotashCorp – our goal is to become representative of Aboriginal people by 2020 in our Canadian operations – we also look at how we invest in our communities so that it benefits First Nations and Métis people in the province. And we're also looking at what we can do in our supply chain, in terms of supporting Aboriginal-owned businesses and encouraging all of our suppliers to have Aboriginal content.

The Playbook is intended to support our suppliers, to let them know our objectives around Aboriginal inclusion in the supply chain.

It's about capturing the story of what we've done and sharing that success with our suppliers. It's a handbook on what they can do to get started, particularly if they don't have a strong Aboriginal inclusion program in their company.

Q: Can you elaborate on what's in the Playbook?

A: The Playbook has a number of components. Our own inclusion strategy focuses on direct employment, community investment, supply chain and subcontracting opportunities, and education and training, so our Playbook shares information in all of these areas for our suppliers.

The Playbook also shares some of the partnerships we have built on our own journey during the past six years. It shares some of what our initial top priorities were around community investment and who some of our community partners are. It also outlines where we've done employment and training programs and even mentions our own training programs, such as the Aboriginal awareness we've offered to all our employees at PotashCorp. But we are not asking our suppliers to just do what matters to us, we also say, here are some ways you can get started.

We also include a list of not only our Aboriginal-owned suppliers, but Aboriginal-owned companies that want to be suppliers to the industry. There's really no other up-to-date registry of Aboriginal suppliers to the industry. It's a really good way for our own suppliers to subcontract to Aboriginal-owned suppliers.

Q: Do you have goals you'd like to achieve as a result of the Playbook?

A: Our goal is to allocate 30 per cent of our local spend, by 2020, to Aboriginal suppliers or suppliers who share our commitment to Aboriginal development in Saskatchewan. Right now, about 15 per cent of our Saskatchewan supply chain is Aboriginal-owned, but 85 per cent are not Aboriginal-owned.

We're not just talking about what we spend on Aboriginal-owned suppliers; we're also talking about supporting the commitment of our non-Aboriginal suppliers to employ Aboriginal people, to train them, to make community investment and to subcontract as well.

We do all of this because we recognize the demographics in Saskatchewan are particularly compelling for a business like ours that is operating here for the long-term. We're seeing an Aboriginal demographic of 18 per cent grow to 30 per cent by 2045. We have

to think about how we make sure we're sustainable in the long-term, training that labour force, and including Aboriginal people in the economic participation opportunities.

Q: What improvements or benefits have you seen since launching the Playbook?

A: Last year, we know we achieved over \$28 million in spend to Aboriginal-owned suppliers.

One of the things we've started to do is put in contractual commitments for Aboriginal content with all of our suppliers. We'll track it, and we will start to see the benefits from these commitments in the coming years.

We're seeing a lot of exciting responses and input from suppliers on their own inclusion efforts. We're seeing a lot of really good success stories with Aboriginal and non-Aboriginal suppliers as a result of our commitment. They appreciate that we're being forthcoming with how we're doing it and that we're supporting their efforts as well.



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Saskatchewan supply chain has links across the province

Saskatchewan's mines can be found in almost every corner of the province. Uranium is mined in the far north; gold in the north-central region; and potash, coal and other commodities stretch across the central and southern regions.

They are not, however, islands unto themselves. Every mine requires significant support from companies providing everything from fuel and food to equipment and vehicles. Those companies comprise the mining supply chain, and while they can be found in most parts of Saskatchewan, there are dominant clusters in Saskatoon, Regina, Estevan, Yorkton/Esterhazy and in northern Saskatchewan.

Jim Nowakowski, president and CEO of JNE Welding in Saskatoon and chair of the Saskatchewan Industrial and Mining Suppliers Association Inc. (SIMSA), describes the chain as a tight-knit network of companies working effectively in industrial clusters.

"In other words, most of us know each other and have a good idea who is most competent and competitive at each scope of work," he said.

"Many of our Saskatchewan companies may not be that big; in fact, the majority employ fewer than 50 people, and at first thought may not either be big enough to take on an industry capital expansion project, or may not cover all scopes of work required in the contract.

"Over the years we have learned to depend on each other and work well together when it makes sense to team up on a specific project. It is not unusual for us to compete with one another on one project, yet when it makes good sense we are on the same team and working together on the next project to ensure we are able to keep the jobs in

Over the years we have learned to depend on each other and work well together

JIM NOWAKOWSKI
JNE WELDING INC

Saskatchewan and best serve our mining industry customers.

"We have a unique yet very valuable bond here in our Saskatchewan industrial world. We have found a way to grow together and to support one another with the spirit and ethics of our prairie heritage. With the spirit of co-operation, a common goal and vision the Saskatchewan Industrial Mining Association is proud to help move our industry players forward towards a bright and fulfilling future in support of the Saskatchewan mining industry."

Brandt Industries is a great example of a business with a wide reach across the clusters. Jim Thompson, Brandt's director of sales, mining, notes that Brandt is a diverse company working in multiple sectors, but mining is one of its primary platforms.

"From a consistency standpoint and long-term viability, it gives us that level of business to support year-after-year operations," said Thompson. "It's a segment that allows us to keep that diversity sustainable."

Brandt has large operations in Saskatoon and Regina; a branch in Swift Current; and satellite locations in Estevan, Lloydminster and Esterhazy. The company works with the northern mines, potash mines, and with Westmoreland Coal in the South.

"The two hot spots are really Saskatoon and Regina," said Thompson. "It's a corridor that serves the industry. Highways 1 and 11, from a logistics and transportation standpoint, provide access to the key locations.

"Regina is a strategic location; it's a point, a hub of product and transportation coming in from all parts of the world, from the U.S. or wherever we are getting our products. We do also have Evraz as a steel supplier within the Regina base. We can leverage that supply chain to provide a more holistic approach to the mining customers."

Working with the mining industry, however, is not just about providing products and services, said Thompson.

"Among the less obvious pieces that mining brings to Brandt are philosophies found in the mining community," he explained. "We have a strong presence in the continuous improvement realm. Lean manufacturing principles are foundational in our manufacturing and other parts of our business, and all mines have that kind of commitment to continuous improvement. That enhances and supports what we do.

"We will provide them with some insight and knowledge, and they will provide us with the same.

"The factors of safety within mining also give us a platform to work from. We have a strong safety commitment. It's a culture you need to learn and work with in all groups. Mining is the leader of every industry in safety,

Welding at Brandt Industries



Kelly Panteluk Construction Ltd. moves more than eight million cubic metres of construction material annually.



Northern Resources Trucking hauls everything but livestock and people in and out of northern Saskatchewan.

and it helps us become better in that space, as well."

Brandt, indeed, is heavily involved in creating and providing innovative safety compliance products. For example, the company was part of a successful project on ground penetrating radar, now a standard safety application.

"Brandt played a key role in that. It's an overused term, but we really do provide the solutions. Even if it's an excavator or a loader, we look at the application and make sure the equipment is fit for purpose. It's a complete solution platform that we use in our approach in every part of our business.

"We live it. We are selling solutions to make the operation safer and reduce their costs."

Brandt has 27 locations across Canada and works in the United States and around the world, added Thompson.

In addition to manufacturing services and sales, mining requires a vast number of other services, some of them unique to the north.

Dave McIlmoyl, President of Northern Resource Trucking (NRT), said almost 100 per cent of his company's business is mining-related, mainly coming from uranium miners Cameco Corporation and AREVA Resources, and also from Silver Standard, which recently acquired Claude Resources and operates the Seabee gold mine.

NRT's top 10 customers beyond the three miners are the other companies supplying services to those mining firms. For example, NRT hauls food north for Athabasca Catering, and fuel for Imperial Oil and Federated Co-Op.

"Ninety-some per cent of our revenue comes from the mining industry. I wouldn't be here if it wasn't for that," said McIlmoyl.

It's a similar situation for the other companies in the northern supply chain cluster, said McIlmoyl. Mining is crucial to the North.

"There's no other real industry there," said McIlmoyl, apart from some forestry and a few other small sectors. "It's a struggle outside

of the mining industry. In the south you have the potash mines, agriculture as well as oil and gas. With us, it's uranium, and some gold," he said.

NRT hauls all liquid and dry bulk commodities that go into the mines, such as lime, cement, fuel, pressure vessels, anhydrous ammonia and propane, as well as flat deck and van freight, refrigerated commodities such as groceries, and over-dimensional items.

"The only things we don't haul are cattle

// We live it.
We are selling
solutions to make the
operation safer and
reduce their costs. //

JIM THOMPSON
BRANDT INDUSTRIES

and people, which makes us a bit unique. Most companies will specialize. We haul everything.

"The geography keeps most people out. Most trucking companies in North America operate on pavement. Most of our miles are on gravel and ice road. Over the years, we've evolved to haul everything."

NRT runs specialized trucks that are set up for travel in the tough geography of the north.

"We would have 100 to 120 trucks, either owner-operated licensed to us or company trucks. When we get busy in the fall we bring on more trucks. We have 20 office staff and total staff of 150, mainly drivers."

Another supply chain hot spot exists in the southeast corner with companies like Kelly Panteluk Construction Ltd. (KPCL) that

serve the local coal, power generation and oil industries.

Operating out of Estevan and serving clients throughout the prairie province, KPCL moves in excess of eight million cubic metres of construction material per year.

"The mining industry represents a huge opportunity for us. For coal mining, we predominantly construct heavy haul roads and reclaim land disturbed by strip mining," said company owner Kelly Panteluk. "However, on occasion, KPCL has been called in for emergency strip mining and hauling work, like the request in 2011 when mine equipment was unable to access deposits due to excessive flooding of the Souris River."

Coal still plays a vital role in the generation of power. "With two power generation facilities located near Estevan and one in Coronach, there are opportunities for companies like ours to support the maintenance and expansion of these SaskPower facilities," explained Panteluk. "We have worked at each of the facilities to construct, expand or rehabilitate ash lagoon ponds, canal waterways and spillways."

The company boasts a modern, well-maintained fleet of over 250 pieces of heavy construction equipment that enables operations to ramp up production and facilitate large, bulk excavating when needed. "Our largest excavator is 200 tons, and to put this into perspective, one bucket can fill a tandem truck trailer one and a half times," explained Panteluk. "Everybody can move a cubic metre of dirt, but it comes down to how efficient and effective you can be while doing it."

The company's capabilities enable it to tackle large, technical earthworks projects across multiple sectors including mine development and expansion; oil field builds, reclamations and contaminant solutions; power generation structures; transportation infrastructure; and water control structures.

KPCL has also been heavily involved in the

potash industry over the years. It has focused largely on constructing tailings management areas and evaporation ponds – shallow artificial ponds designed to extract salts from sea water or other brines. KPCL has worked on projects with Agrium, K+S Potash Canada, The Mosaic Company, PotashCorp and many others. To better support operations in the potash mining industry, the company recently opened a branch office in Saskatoon.

"Our contributions within the mining industry has fuelled growth within our company," said Panteluk. "We employ upwards to 300 people during peak season, and securing contracts within the mining industry is essential to support our crews."

"Mining is a major contributor to not only the southeast region, but to the province as whole. The industry has a huge spin back into the community when you consider those employed by the power plant facilities and the mines, and all those that directly and indirectly supply the industry from machine shops to retailers. It would knock a lot out of this area let alone power cost increases to the rest of the province if there wasn't coal mining and related power production." 🏠



Survey results for Mining Supplier locations

NOTE: Some suppliers have offices in more than on location

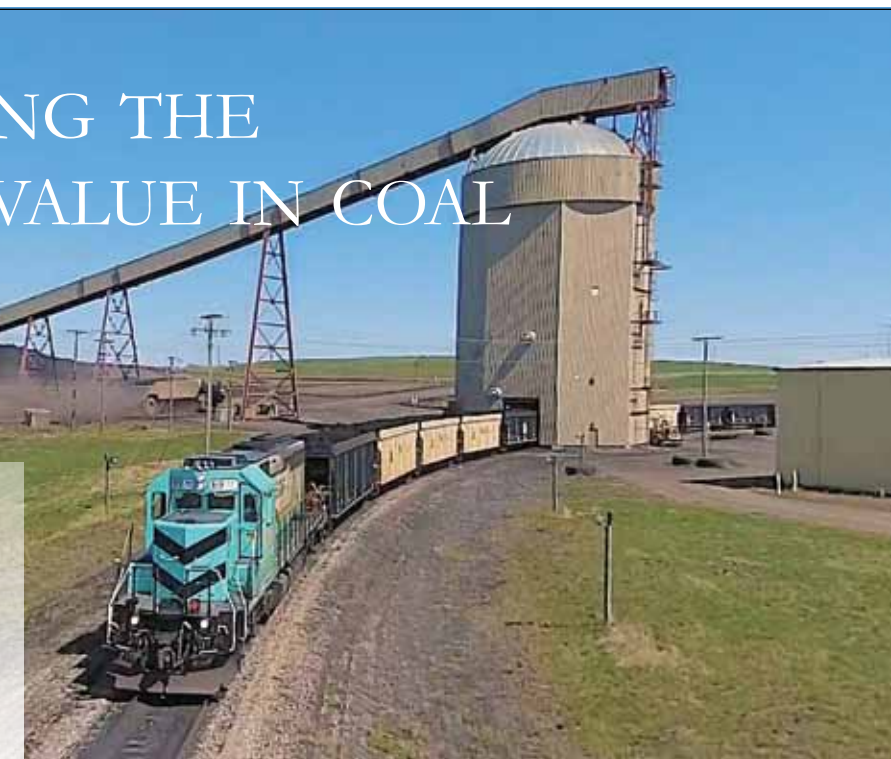
- 1 NORTHERN REGION**
16 Companies, 605 Employees
- 2 WESTERN REGION**
7 Companies, 84 Employees
- 3 SASKATOON REGION**
137 Companies, 8,755 Employees
- 4 REGINA REGION**
41 Companies, 4,155 Employees
- 5 YORKTON/ESTERHAZY REGION**
15 Companies, 673 Employees
- 6 ESTEVAN REGION**
8 Companies, 65 Employees

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ORE DEPOSITS

Copper

What is copper (Cu)?

The word copper comes from the Latin word 'cuprum,' meaning "from the island of Cyprus." Copper is a common base (or non-precious) metal made of a soft, malleable, ductile element which, in its native form, is naturally reddish-brown in colour. Copper has been used by humans for over 10,000 years and its versatility has helped it play an important role in the development of civilization.

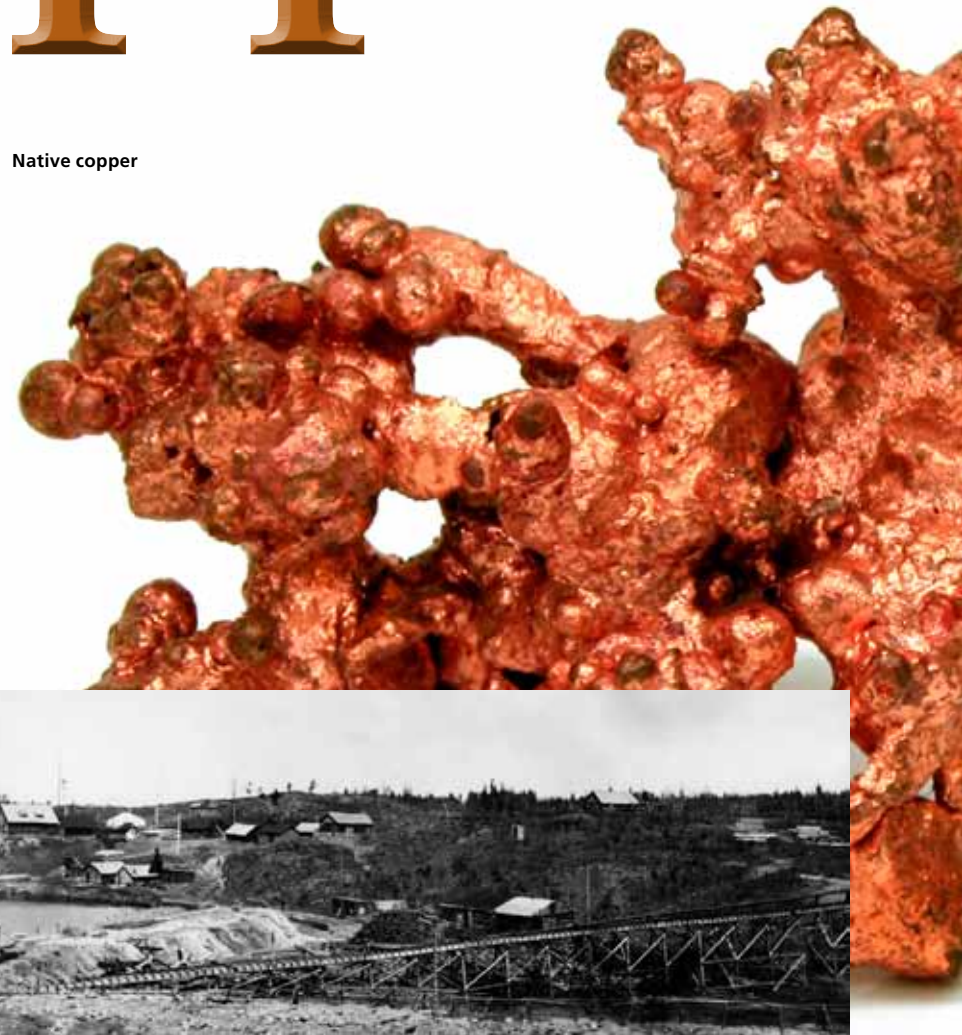
Where is it found?

Copper is produced world-wide and is found in a variety of geological settings. It can occur as a native metal (meaning in its pure elemental form), but much more commonly it occurs in minerals where it is combined with other elements to form copper oxides (cuprite), copper carbonates (azurite and malachite) or copper sulphides (chalcopyrite, bornite, covellite and chalcocite).

In Saskatchewan, copper is mainly found in rocks of the Precambrian Shield in three different geological settings: 1) as volcanic-associated sulphide deposits – usually together with zinc (Zn), lead (Pb), silver (Ag) and gold (Au) – which formed on the ancient ocean floor; 2) in magnesium- and iron-rich magmatic intrusive bodies, such as gabbro, together with nickel and sometimes platinum group elements; and 3) in sedimentary rock-hosted deposits, usually with Ag.

The vast majority of historic copper (and other base metal) production in the province has come from volcanic-associated deposits in the Flin Flon-Hanson Lake area in the east-central portion of the province, and to a lesser extent in the La Ronge region in central Saskatchewan. The world-class Flin Flon mine straddled the Saskatchewan-Manitoba border and produced 62.5 million tonnes of Cu-Zn-Au-Ag ore between 1930 and 1992. During this

Native copper




Early photo of the Flin Flon mine site as land is cleared for further development. 1927.
Flin Flon Community Archives

time span, over 43 million tonnes of ore were mined on the Saskatchewan side.

What is it used for?

Copper is an excellent conductor of both heat and electricity and has a wide range of uses. Copper can also be readily recycled without loss of quality, which is why approximately 80 per cent of all copper ever mined is still in use today. Copper's unique physical properties make it ideal

for a wide range of industrial applications and other uses, including electrical wiring, pipes, and corrosion-resistant manufactured parts, either with pure copper or as alloys such as brass (copper and zinc) and bronze (copper and tin). It is so versatile that copper is part of over 400 different alloys in use today. Copper is also essential in numerous building materials, chemical compounds, instruments, coins, jewelry, art, and in medicine in antimicrobial agents. 

In each edition of ORE, we go beyond the official bios to give our readers insight into the leaders of Saskatchewan's mining and exploration companies.

Beyond the Bio

GILES HELLYER,
PRESIDENT POTASH
BHP BILLITON

Giles Hellyer is literally 14,500 kilometres from his birthplace — nearly as far from Saskatoon as it is possible to be.

The President Potash for BHP Billiton was born in Tasmania, the verdantly beautiful and hilly Australian island. He came to Canada five years ago, landing in the Northwest Territories as the Asset President of the Ekati diamond mine. After its divestment to Dominion Diamonds, he was transferred to Saskatoon with responsibility for BHP Billiton Potash.

Yet four years later, despite the very different landscape and the vast distance from Tasmania, he feels very much at home.

"I prefer to think of myself as Canadian," said Hellyer in an interview. "I like living in this part of North America."

"There's a strong link to Canadian heritage and culture for Australians. Canadians are more polite versions of Australians. The two cultures work together quite well."

It's quite a compliment to Saskatchewan, since Hellyer has lived and worked in many places around the world. He and his wife, Gaylene, have "moved a lot."

"She loves Canada," said Hellyer. "Of the sorts of places you could possibly go in the world, Saskatchewan, and in particular Saskatoon, is the best place. A lot of people don't appreciate that. With companies like ours, the options you have apart from the capital cities around the globe, it doesn't get any better than Saskatoon."

The couple came to Canada with two of their three daughters; the eldest had been accepted into university in Australia, and decided to remain. Their second daughter recently graduated from Aden Bowman Collegiate and, wanting to be an architect, applied to and was accepted at an Australian university. Their youngest daughter now attends the Edwards School of Business at the University of Saskatchewan.

Busy with work and family, Hellyer nonetheless finds some time to travel and visit northern Saskatchewan in the summertime.

"I love North America and seeing other parts of Canada, when I can get the time. I love Saskatchewan and its lakes, and I like to jet-ski in the summer."

Banff, Alta. is a favourite destination in the winter; Hellyer finds the Rocky Mountains to be "among the best places on earth."

In Saskatoon, he enjoys walking and bike-riding in the summer, and recently became acquainted with a local winter sport tradition.

"We recently tried curling; we had a company social event. I have a much better appreciation for how difficult it is."

Over 30 years of service

Hellyer has a long history with BHP Billiton, starting with the company supporting his mechanical engineering honours degree from Swinburne University in Melbourne.

"I joined the company in 1984, and I was lucky enough to be taken on as a training engineer. To have the opportunity to work for one company for so long is very unusual. Having the opportunity to work for a company like ours and be able to work in different countries is certainly a privilege," he said.

He has also served BHP Billiton as Vice President of HSEC (health, safety, environment and community) in the company's former uranium division, along with senior production positions in large open pit, underground and smelting operations. In addition, he has experience in many commodities including manganese, iron ore, copper and, of course, diamonds.

Potash is a new commodity option for BHP Billiton, and Hellyer — with that long experience in various commodities — is now at the helm of developing the Jansen greenfield mine near Humboldt, Sask.

"There's a lot of interest in Jansen in the world of potash, as you can imagine," he said. "We had a great year last year and have been sinking shafts into the ground for a little while now."

"We've managed to get through the Blairmore formation with the shafts, and are beyond that now. We have been working with new technology putting the shafts in and are proud of our progress."

"We look forward to an even better year this year. We are continuing to sink the shafts

and are doing a fairly extensive study into the design of the surface facilities and the mine itself. That's going very, very well.

"The most exciting thing is that we're starting to fully consider how we would operate, what the facility would look like, and how would we integrate new technology. It's really quite exciting to shift your mindset to that world."

Being closely connected to BHP Billiton's other operations, and a member of the Minerals in the Americas group, has provided a great deal of support, vision and information to the potash mine's development. The petroleum arm of BHP Billiton based in Houston, Texas, has also been of great assistance in shaft sinking.

"It's a chance of a lifetime to be involved with a new commodity and have a say in the design, look and feel of that," said Hellyer.

It keeps him very busy: a typical day for Hellyer begins at 7 a.m. and ends at 7 p.m. He is always in contact with BHP Billiton divisions elsewhere in the world, which means juggling meetings in various global time zones.

"I see my job as being an integrator," he said.

"People on the team make all the decisions. I prefer not to think about hierarchy; I prefer to think people are all equal, even if we do have different jobs and different levels of responsibility."

Part of my day is just talking to people within the office to better understand what's happening in their world, and get a better understanding of people and what I can do to make their lives a little easier.

**GILES HELLYER
PRESIDENT POTASH
BHP BILLITON**

"The other part of my day is just talking to people within the office to better understand what's happening in their world, and get a better understanding of people and what I can do to make their lives a little easier."

Philosophies of mining, people and community

Hellyer's vision for BHP Billiton Potash goes beyond the mining of a commodity. He is very concerned with safety, women in the workplace and supporting communities.

"One thing I've learned in my time is no matter what you do, if you can't do things safely it's really not worth it," he said.

"We want to do our part in Saskatchewan to have a safe project and a safe operation, and also contribute back to that through associations with other companies."

Watching his intelligent daughters grow up has also sharpened his awareness of including women at all levels of the company.

"I think we all have an obligation to do a lot better on inclusion and diversity in the workplace. In this day and age, women in the workplace should be very much treated as equals and have equal opportunities and be paid the same. There should be no differentiation."

"We try to improve the level of gender balance. It's creating a lot of new conversations. They represent such a great opportunity for future workforces. I think Jansen could become something significant for First Nations partners, as well."

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Northern Saskatchewan caribou population going strong



Woodland caribou are officially a species at risk in Canada, but a study led by University of Saskatchewan biologist Phil McLoughlin shows there is a sizable herd of woodland caribou being sustained in Saskatchewan's far north.

"It's a pristine area with very low anthropogenic (man-made) disturbance," McLoughlin said in a recent interview. "It's as natural as you're going to get. Some of the caribou had home ranges where there were no roads, no power lines and no seismic lines."

The study's interim report on caribou in Saskatchewan's boreal shield area, released in December, 2016, is in sharp contrast to predictions made by Environment Canada in 2011 when the agency released its draft national recovery strategy under the federal Species at Risk Act. Environment Canada's final recovery strategy in 2012 accepted that until new data were collected, a status of 'unknown' would be assigned to the Saskatchewan boreal shield.

Because large areas of Saskatchewan's boreal shield forest area have been subject to wildfire in the past 40 years, the Environment Canada model took the view there would not be enough quality habitat in the

region to sustain a woodland caribou herd in this region of Saskatchewan. The U of S study is blunt in contradicting Environment Canada's initial conclusions.

"(It is) incorrect with what we currently know about the population and how it responds to available habitat," the interim report states. "Rather, the best available evidence suggests that the status of woodland caribou in the Saskatchewan Boreal Shield is one of a large and self-sustaining population, perhaps one of the most secure populations of boreal caribou in Canada."

Even though Environment Canada acknowledged that human-caused habitat disturbance was low (less than three per cent impact from communities, mining activity or roads and power lines), the report raised alarm bells with the mining industry and northern communities who were concerned that future mine projects or other developments like roads could founder because of the amount of habitat damaged by wildfire and the potential impacts on woodland caribou.

The federal model postulated that a previously fire-damaged forest would have to regenerate for more than 40 years before it could be utilized by caribou for habitat and

that at least 65 per cent of the landscape should be undisturbed to sustain woodland caribou.

While forest fires have definitely affected the landscape, McLoughlin's study concludes that slightly more than half of the boreal shield – referred to by Environment Canada as the SK1 caribou administrative unit region – remains ideal habitat for woodland caribou. This includes land characterized by 40-year-old pine and black spruce forest, black spruce bogs and open muskeg.

In the SK1 study area, the U of S study has estimated the caribou density to be 36.9 animals per 1,000 square kilometres which would make for one of the highest densities for boreal woodland caribou in Canada. The study estimates there are approximately 3,380 caribou in the study area and as many as 5,000 in the entire boreal shield area.

The interim report's conclusions are welcomed by Saskatchewan Mining Association (SMA) President Pam Schwann.

"This report goes to the heart of our position that in northern Saskatchewan, forest fires have a different effect on the woodland caribou population than human activity and that fire disturbance cannot be equated to anthropogenic disturbances," Schwann

said. "Now, we have a science-based report that shows that boreal caribou populations adapt, or respond favourably in regimes with low-levels of man-made disturbance but that have high levels of natural disturbances like fire."

Schwann is hopeful that Environment Canada will take the U of S study into account and recognize that the SK1 range is an outlier in the broader National Recovery Strategy.

"Along with the evidence for a self-sustaining woodland caribou population in the SK1 region, an important conclusion to be taken from the interim report is that while the singular modelling approach employed in the National Recovery Strategy (which is based on a low fire regime) may fit other ranges of the country, it does not accurately predict the health or the sustainability of the woodland caribou population in northern Saskatchewan."

McLoughlin says there has been no official reaction by Environment Canada to the interim report's findings, but points out the U of S study was not done in a vacuum as the federal agency is a major funding partner and its staff helped out with each of the winter field surveys.

The nature of fire recovery in Saskatchewan's far north may be one factor keeping caribou in balance with predators, McLough-

lin explained.

"In our study region, it is a short fire cycle," he said. "When habitat is burned, you don't see a deciduous succession stage. If it is a pine forest, it goes right back into a pine forest. So this is not good moose territory."

The lack of alternate prey such as moose or deer means wolf densities in SK1 are low and their territories three and a half times larger than in other caribou ranges, the U of S biologist explained.

While the U of S study is finding high survival and pregnancy rates among female caribou, the survival rate of young calves at only 20 per cent is considered only moderate to low. It may be wolf predation responsible, or it could also be black bear predation. A number of black bears are being tracked through collaring.

"There is a big push to see what black bear might do in the calving season. We want to know what is limiting the population," McLoughlin said. "It may just be an indication that the herd is at its carrying capacity."

Five years ago, the Saskatchewan branch of the Canadian Parks and Wilderness Society (CPAWS) shared some of the same concerns as the mining industry about the initial Environment Canada model for forest fires and its likely effect on woodland caribou in the boreal shield area.

The best available evidence suggests that the status of woodland caribou in the Saskatchewan Boreal Shield is one of a large and self-sustaining population.

INTERIM REPORT ON CARIBOU POPULATION IN SASKATCHEWAN'S BOREAL SHIELD

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"We're ecstatic to hear caribou are doing well there," said Gord Vaadeland, executive director of CPAWS Saskatchewan. "Maps of burned out areas are often shown as polygons, but we know there are intact areas within those burned areas which are not disturbed," Vaadeland said. "I will be interested to see how caribou use these areas that aren't entirely burned."

He says CPAWS Saskatchewan had always been more concerned about the health of the woodland caribou herd in the southern SK2 boreal plains area of Saskatchewan. Even here there was progress in 2016 with an agreement between forestry companies, the province, Indigenous and municipal communities and NGOs to set aside about 2,230 square kilometres of habitat for 20 years under the Canadian Boreal Forest

Agreement.

Vaadeland says he hopes the province will continue to put resources into completing a provincial woodland caribou recovery strategy despite budget pressures.

"We've gone from being a laggard in caribou recovery in Saskatchewan to becoming a leader," Vaadeland said. "Industry wants to take this issue seriously and so we hope the momentum continues."

In the far north, the study work led by McLoughlin continues until a final report is completed in 2018. Just prior to this year's March 15 aerial survey, there remained collars on 64 caribou.

While today's sluggish uranium market means there are no new mine development proposals before regulators, Schwann says the SMA values the information obtained by

McLoughlin's research team and continues to fund the project in the far north through to the end of 2018.

"We've got real, multi-disciplinary data from Saskatchewan that provides a much clearer understanding of the population status of the boreal caribou, rather than hypothetical models based on another jurisdiction. The results of this study will reduce uncertainty related to project development while ensuring the region is being properly managed for retaining a healthy ecosystem, including the presence of a healthy boreal caribou population on the landscape," Schwann said.

This article complements an earlier article Counting Woodland Caribou that appeared in the Spring/Summer 2013 edition of ORE at the onset of Dr. McLoughlin's study.

TAGGING ALONG

TERRY BIRD LEAD ADVISOR, INDIGENOUS INITIATIVES K+S POTASH CANADA



Terry Bird is on the road so much for K+S, he's already into his second truck.

The Lead Advisor, Indigenous Initiatives for K+S Potash Canada wore out the first one travelling back and forth from Saskatoon to the company's Legacy project near Moose Jaw, as well as over grid roads and highways in Treaty Four territory.

With a strong focus on attracting Indigenous companies and their people to work for K+S, putting on the miles is just part of the job for Bird. His outreach is a big part of what the potash company is doing to successfully build relationships with local communities.

"I walked across the road and talked to Indigenous people in the area," said Bird. "To me it's not rocket science. It just takes the effort and the understanding of First Nations perspectives on the projects in their area and their rights entrenched in Section 35 of the Constitution of Canada. We want to make sure we are going there. We are committed and we provide successes immediately.

"We never go into communities with the

idea that we can't deliver. I think that's been a big part of our recognition and accreditation from local Indigenous people as well as the Office of the Treaty Commissioner of Saskatchewan, and the Saskatchewan First Nations Economic Development Network."

Indeed, for his efforts, Bird was the 2016 recipient of the network's individual of the year award.

A member of the George Gordon First Nation near Raymore, Sask., Bird was educated first at a residential school and then in Regina, where he studied at SIAST (now Saskatchewan Polytechnic). Emerging with a business administration diploma and certificate with the Purchasing Managers Association of Canada (PMAC), he landed at SaskEnergy, and then SaskTel, where he was introduced to procurement.

Bird then joined K+S five years ago. "I'm proud to say I was one of about the first 50 people hired to the organization, when K+S had purchased the mineral rights of the former company, Potash One," he said.

"Given my background, I had noted that in the past, industry wanted to develop

Aboriginal supply chains with Indigenous companies. However, I always saw a lot of verbiage and no solid commitment or processes to create that situation.

"And given the interests of Indigenous leadership in Treaty Four territory to ensure their membership and businesses be included in resource development our company worked to develop policies that promote Indigenous inclusion in procurement and human resources."

The company's policies have led to a number of joint ventures between local people and K+S, as over \$350 million of contracts have been awarded to businesses with Indigenous involvement since the beginning of the project. One of these contracts includes site services from Points Athabasca and File Hills Qu'Appelle Development Corporation. Of their approximately 70 staff, 65 to 70 per cent are of Indigenous ancestry. They provide road maintenance, pumping, site clearing and electrical work – "really anything we throw over the fence at them," said Bird.

There are also entrepreneurs on site, such



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It's always a blessing for me to walk into some of these rooms where Indigenous contractors are working with non-Indigenous people, side by side.

TERRY BIRD

as William Lavallee of the Piapot First Nation and owner of Four Souls Cleaning, whose 31 staff provide janitorial services.

"William has been good at ensuring that local Indigenous people within Treaty Four are working on our site. I'm proud of him, because he's gone through a lot in working for a mine, and he understands the seriousness around safety and all the regulatory requirements to not only start but be sustainable on the site," said Bird.

Altogether, at the peak of the Legacy mine's construction in mid-2016, approximately 344 people who self-declared as Indigenous were working through contractors on site.

"Now that we're transitioning from the capital investment phase to an operational phase, we're starting to see those numbers decline slightly," said Bird. "However, our next pursuit is to sustain Indigenous busi-

nesses for operations. That's part and parcel of what I've been up to in the last little while. As opposed to sourcing and seeking, we're looking to retain."

Another of Bird's responsibilities is to meet with elected leaders, provide them with updates on K+S's employment successes and highlight companies that are Indigenous-friendly. The leaders then pass those messages along to their communities and to people looking for employment.

"It really helps when I meet with chief and council that I am able to list off numerous companies that are successful in hiring their people," said Bird. "It garnered us lots of recognition with surrounding leadership and people around the site. We want to build on that, making a difference to the lives of these individuals and communities, being inclusive, and building our social license to operate in rewarding ways."

"I'm certainly not the only one responsible for procuring this type of work. Our strategy has been approved by K+S Potash Canada's executive team; further, it's been approved by our parent company in Germany (K+S AG head office.)"

It has been a lot of hard work, and Bird is still trying to manage his work-life balance, finding time to spend with his wife, Gina, his son, Kaz, now 13, and stepdaughter, Paulina, 22.

But it has been worth it. Bird says he is proud to see the changes in perspectives of Indigenous people embracing industry.

"It's always a blessing for me to walk into some of these rooms where Indigenous contractors are working with non-Indigenous people, side by side. For me it's been personally fulfilling. It's nice to wake up in the morning and know you're going to a job like that."



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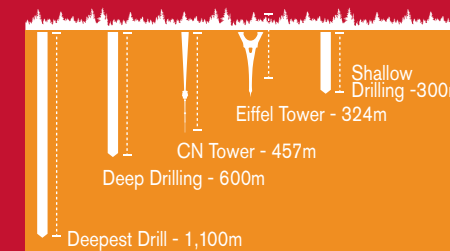
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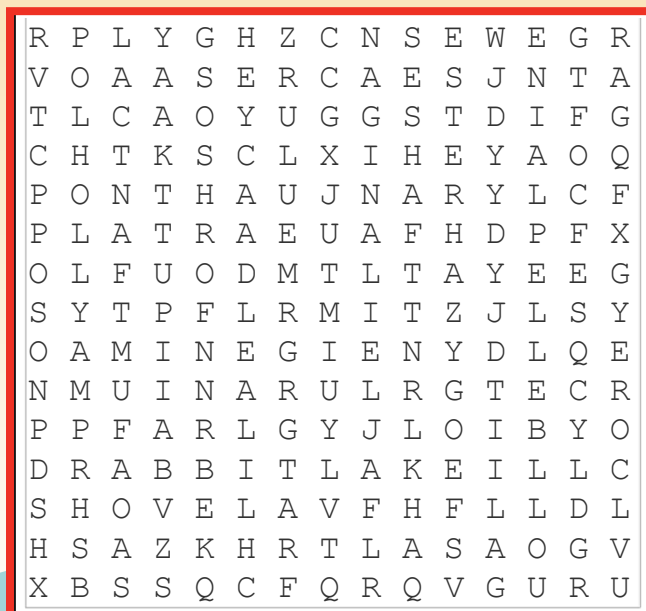
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Saskatchewan Mines & Resources

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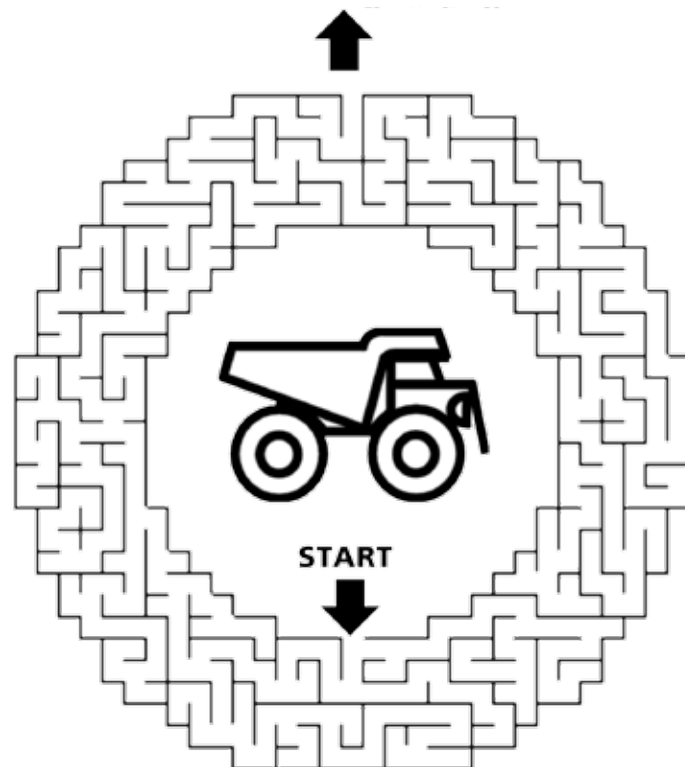
BELLE PLAINE	MINE
CLAY	NATURAL GAS
COAL	OIL
CORE	POTASH
CRYSTALS	RABBIT LAKE
DRILL	ROCK HAMMER
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W	T	L	I	B
X	S	M	H	C
Y	R	N	G	D
Z	Q	O	F	E

2

J	D	T	U	A
C	F	E	Y	V
W	B	S	L	X
I	G	K	Q	M
H	Z	R	N	P

3

A	P	H	F	K
M	B	R	Q	Y
X	C	G	W	J
U	O	N	E	Z
L	V	D	S	I

4

E	V	L	Q	K
H	G	F	U	R
D	W	N	B	J
S	C	Z	I	P
T	X	M	Y	O

5

D	P	Q	X	G
T	L	C	H	M
E	R	Z	K	O
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J	W	I	N	V

6

S	C	W	R	P
D	L	K	J	X
V	B	Q	Y	O
E	U	I	Z	F
T	A	M	G	N

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Mosaic's SAFETY JOE Targets Slips, Trips and Falls



It happens every fall as temperatures cool and rain turns to ice and then to snow. The frequency of slips, trips and falls at Saskatchewan mine sites climbs – not at every site and not every year, but it is a general trend. In 2016, Mosaic developed a proactive campaign to reduce the number of slip, trip and fall incidents at its Belle Plaine, Colonsay and Esterhazy sites.

"The safety of our people is a top priority," says Holland Thompson, Director EHSS at Mosaic. "We pride ourselves on setting rigorous environment, health and safety goals every year that challenge us to continually improve. In fact, 2016 was another record year for safety performance. As a company, we achieved our best annual recordable incident frequency rate (RIFR) ever."

Safety is part of the cultural fabric

at Mosaic. The company's safety management system is designed to identify, evaluate and control risks. Employees at all levels across each site promote safety awareness and reinforce a working environment that promotes connectivity, teamwork and productivity among employees, while also supporting the company's pursuit of an incident and injury-free workplace.

"There are a lot of things a company can do to promote a safety culture; the challenge is sustaining those behaviours," Holland says. "Real change happens when employees embrace safety culture and extend it beyond the workplace into their home life."

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Meet Safety Joe. He's an affable dude



Members of the Belle Plaine Service Rig Crew; Belle Plaine has gone over a year without a recordable injury – an impressive accomplishment by all industry standards.

rigged out in head-to toe PPE (personal protective equipment): hard hat, safety glasses, ear plugs, gloves, reflective yellow jacket, Mosaic blue pants and work boots. Joe is variously pictured mid-slip, mid-trip or mid-fall. His message is simple and highly visual: prevent slips by using designated walkways, prevent trips by wearing correct footwear, prevent falls by using handrails.

Starting in mid-October, Safety Joe appeared on posters at Mosaic mine sites. The company also handed out 1,000 Safety Joe postcards and asked employees to identify slip, trip and fall hazards and how to correct them.

"We also decided to use Safety Joe to extend the safety message to children at home," says Marnel Jones, Communications Manager. "We created a Safety Joe activity page that asked kids to draw or list things around the house that could cause slips, trips or falls, then send it in to us for a chance to win an iPad mini."

Mosaic reached out to children of Mosaic employees with a safety campaign, and the results were encouraging. About 50 children sent in their Safety Joe activity sheet.

"We want to get safety culture ingrained at a young age," Jones says. "We hoped kids would make the connection between Safety Joe's PPE and what they see their mom or dad wear at work. It's good for

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Mosaic
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In 2015, Mosaic's Esterhazy K1 site was a co-winner of the CIM John T. Ryan Award. Former General Manager Paul Gill, left, accepted the award from Gord Winkel, chair of CIM John T. Ryan Safety Trophies Committee. Mosaic has won the award twice before, for Belle Plaine in 2012 and Esterhazy K1 in 2007.

them to understand why people wear safety equipment, why it's important to identify safety risks and correct them."

Even more encouraging were the results of the campaign at the mine sites: compared to the year before, Mosaic saw a 41 per cent decrease in slips, trips and falls.

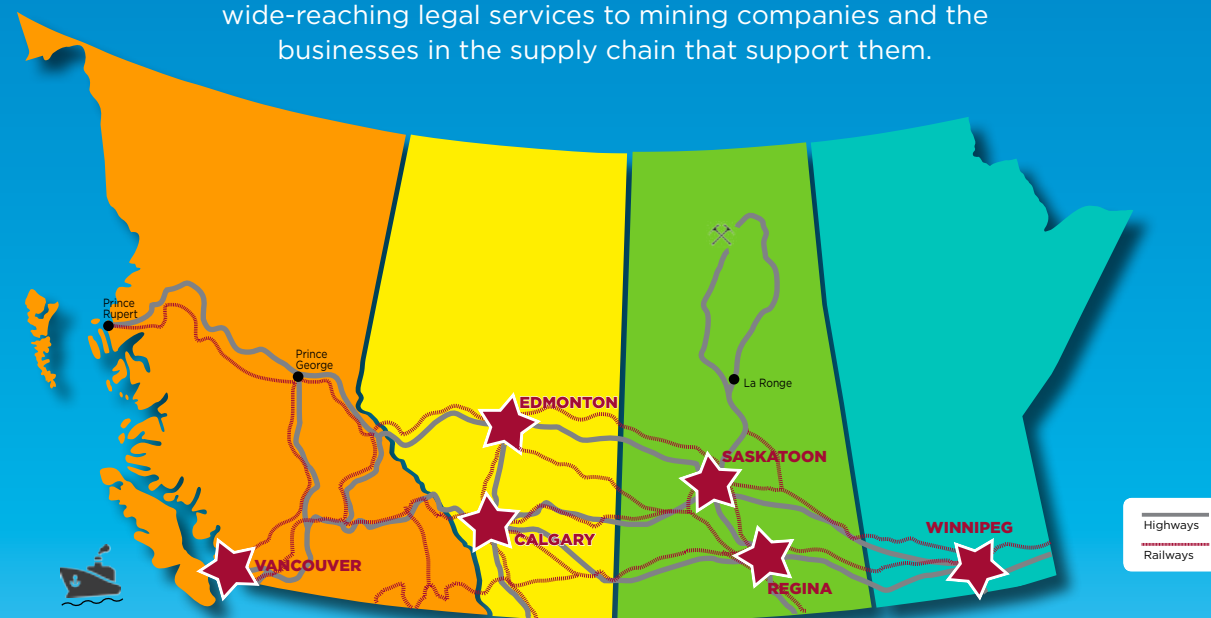
"Safety culture is at the forefront of everything we do. There's no task more important than doing it safely. That is the mind set our workers have every day when they come to work," Jones says. "We continue to build on our EHS gains, because we know that, when it comes to keeping our people safe, our work never ends."

For now, Mosaic has found an effective new ally in Safety Joe. 🏠

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DISRUPTIVE TECHNOLOGIES: Innovation to revolutionize mining

Innovation Boot Camp links mining suppliers to research, funding groups

Mining was originally an industry focused simply on digging commodities out of the earth with sharp tools and big equipment.

That's changing fast. Today's mining companies are reaching for innovation and technology, and creating opportunities for disruption in their field.

Innovation, says Deloitte in its recent Tracking the Trends 2017 report on mining, is unlocking productivity like never before.

"In recent years, the mining sector has invested in technological innovations such as driverless trucks, sensors and advanced analytics to reduce cost, streamline equipment maintenance and prevent safety incidents," said the report.

"Today, new technological advancements are rapidly driving the next wave of productivity gains. Technologies such as drones, real-time modeling and geo-coding are creating real-time, productive and functional improvements."

Mining companies should not only adopt the technology, but create a culture of innovation that leverages insights beyond the mining industry, said Andrew Lane, Energy and Resources Leader, Deloitte Africa.

"By adopting innovations from sectors such as manufacturing, automotive and pharmaceuticals, the mining industry can enjoy the full range of benefits new technology offers."

To that end, mining associations and companies are increasingly holding events and reaching out to other industries to fuel innovation and success.

In March, Goldcorp and Integra Gold Corp.

hosted an event called DisruptMining during the annual Prospectors and Developers Association of Canada conference in Toronto.

After filtering out the top concepts from 153 submissions, the Shark Tank-like event put innovators in front of top level mining executives and a live audience. The creators of the winning concept received \$1 million.

And in April, the Saskatchewan Mining Supply Chain Forum will include the inaugural Innovation Boot Camp to connect mining supply chain companies with financing groups and innovative research organizations.

Innovation Boot Camp

Boot camp, in the military, has a tough reputation for pushing new recruits to their physical limits.

The Mining Innovation Boot Camp will be much easier on the body, but hopefully will stretch the understanding of innovation — and how to find assistance in achieving it — for mining supply chain executives.

The boot camp's focus is on various presentations by organizations and agencies that can fund and/or assist in research and development for the mining supply chain, as well as support commercialization of innovations coming out of that R&D.

One of the funding groups involved is the International Minerals Innovation Institute (IMII). Executive Director Al Shpyth said his group was pleased to contribute with a presentation.

"Technology and service providers, represented by the mining supply chain, are key to the success of the innovation ecosystem for Saskatchewan's minerals industry," said Shpyth.

"The Saskatchewan Mining Association and Saskatchewan Industrial and Mining Suppliers Association are both members of IMII, and we welcome the opportunity to join the research and funding community in helping to advance innovation in the mining supply chain."

SIMSA's Executive Director, Eric Anderson, described the boot camp as "the other half to the innovation formula. The main portion of the ninth annual Saskatchewan Mining Supply Chain Forum is about 'what is needed' while the boot camp is about 'how to do it.' Both are critical to success."

Presenting research groups include PAMI, an applied R&D organization supporting agriculture and industry in Western Canada and beyond; the Saskatchewan Research Council; the Canadian Light Source, Canada's synchrotron; and educational institutions including the University of Saskatchewan and Saskatchewan Polytechnic.

Following those presentations, groups such as IMII, the Industrial Research Assistance Program (IRAP), Canada's Scientific Research and Experimental Development (SR&ED) program and others present for 15 minutes on how they can help with funding.

It's all part of keeping Saskatchewan mining, and its supply chain, at the forefront of innovation in Canada and around the world. 🏠

Aboriginal Engagement in the Supply Chain

Partnerships build capacity in Indigenous communities

Employment is usually the focus of stories about engagement of Indigenous communities in Saskatchewan's resource sector, but the larger story is the successful involvement of Aboriginal businesses in the mining sector supply chain.

A Meeting of Minds

The partnership between Creative Fire, a full-service communications firm, and Des Nedhe Development, the business arm of the English River First Nation, is a meeting of minds. Sean Willy, Vice President of Des Nedhe, sees the partnership working on two levels. "Creative Fire has been telling the stories of mining companies since 2000. We saw an opportunity to partner to tell these stories, but we also saw an opportunity to tell the Des Nedhe story."

Des Nedhe has developed a strategic plan for sustainable, long-term growth. Building on the success of Tron Mining and Construction, which it acquired in 1997, Des Nedhe has been adding companies that support the mining industry and open doors to new opportunities for the people of English River. That includes companies directly involved in mining, such as Minetec Supply and Mudjatik Thyssen Mining, as well as a professional services firm in Creative Fire.

"Des Nedhe builds sustainable companies that serve the people of English River and all of our community and industry partners," Willy says. "The Indigenous culture in North America was built on trade and now we're rediscovering our roots. We're investing in our capacity, and we're growing and expanding our business and the opportunities we can create for community members. Our partnership with Creative Fire gives us an opportunity to tell our own story."

Des Nedhe acquired a majority interest in Creative Fire in 2015. Together, the companies have been working to develop a long-term strategy to create opportunities that support English River and industry partners.

For Ken Juba, one of Creative Fire's founding partners, diversity was a major catalyst for the partnership. "When you look at the future of our province, the demographics are clear — diversity is essential. We've worked

with clients in the resource sector for almost 20 years, Cameco, PotashCorp, AREVA Resources. And we've learned a lot from them, particularly from their diversity programs. As a firm, we recognized the need to better represent the interests and needs of an increasingly diverse population."

The partnership allows Creative Fire to tap into the knowledge and insight of Des Nedhe. On the one hand, this improves Creative Fire's ability to help resource sector clients share their stories with First Nations, to develop mutually beneficial partnerships and to recruit from a growing pool of talent. On the other hand, it helps First Nations build

When you look at the future of our province, the demographics are clear — diversity is essential.

KEN JUBA
CREATIVE FIRE

relationships with industry, develop brands that serve the needs of their communities, open doors for employment opportunities in design, marketing and branding, and create the economic strength to remain proud and independent.

"Our goal is to improve communication in both directions," says Juba. "Ultimately, that supports growth for our mining clients and our First Nations partners."

Willy says the mining sector is fundamental to the success of Des Nedhe and to its ability to explore additional opportunities. "The resource sector will always be at our heart because our communities are located

in resource-rich northern Saskatchewan," Willy says. "But there are so many more opportunities. We want to expand into those areas."

This is evident in the growth of Des Nedhe. The company has expanded its portfolio to include retail operations in Patuanak, Beauval and Saskatoon, commercial real estate in Beauval and Saskatoon, as well as investments in Athabasca Catering, Northern Resource Trucking, JNE Welding, MLTC RDI (the economic development arm of the Meadow Lake Tribal Council) and Creative Fire.

"We want to be seen as an Indigenous-owned, Indigenous-operated company that serves our communities and benefits our members, but that is also a successful part of Canada's mainstream economy. To do that, we need to build our brand and tell our story in a very visual way. That's something Creative Fire does very well," Willy says.

Joint Venture in Potash

Kitsaki Management Limited Partnership has a successful history of creating employment and economic development opportunities in northern Saskatchewan. Like Des Nedhe, Kitsaki is building for the long-term and that means broadening its horizons. In 2015, the company expanded into the potash industry through a joint venture with the Procon Group of Companies.

Kitsaki and Procon have a good history, having partnered in a joint venture in the La Ronge Gold Belt. The new joint venture is a multi-year, multi-site agreement to carry out mining and industrial services work in PotashCorp's Saskatchewan mines. "We recognize that it is an industry that will grow and be strong for many years to come," says Russell Roberts, CEO of Kitsaki. "It also gives diversity to some of our projects, enabling us to explore opportunities with clients and companies outside of the northern region, which is our typical geographic region."

Through the joint venture, Kitsaki is directly involved in project management and service delivery, creating employment opportunities in underground mining, equipment maintenance, industrial construction and skilled trades. The joint venture also includes re-


cruitment and training of qualified Indigenous workers through onsite apprenticeship programs, and leadership opportunities through hiring Indigenous students enrolled in engineering and technical colleges for work terms, internships and summer jobs.

"This is one of the core commitments of our company. This will increase our capacity to further provide these opportunities for Indigenous people in Saskatchewan, certainly for Lac La Ronge Indian Band members, but we will also be able to extend that opportunity to Indigenous people in other regions as well," Roberts says.

The joint venture with Procon is one of many partnerships Kitsaki has developed with companies involved in the mining sector. Another is with Canada North Environmental Services (CanNorth), one of the largest environmental service providers in western Canada. The company, which is 100 per cent owned by Kitsaki, serves

all levels of government and businesses involved in uranium, potash, gold, diamond, copper, oil and gas, graphite, silica sand, and kaolin mining.

CanNorth services are comprehensive, everything from environmental assessments and baseline inventory studies, to environmental monitoring programs, to regulatory liaison and community engagement services. But what makes the company unique is that, as a First Nations owned company, it is able to maximize Indigenous community involvement in projects, including integrating traditional knowledge, engaging local people in environmental programs, and creating employment and education opportunities.

As these and similar partnerships evolve, Saskatchewan's mining sector is once again leading the way in creating long-term employment and leadership opportunities for Indigenous communities. 

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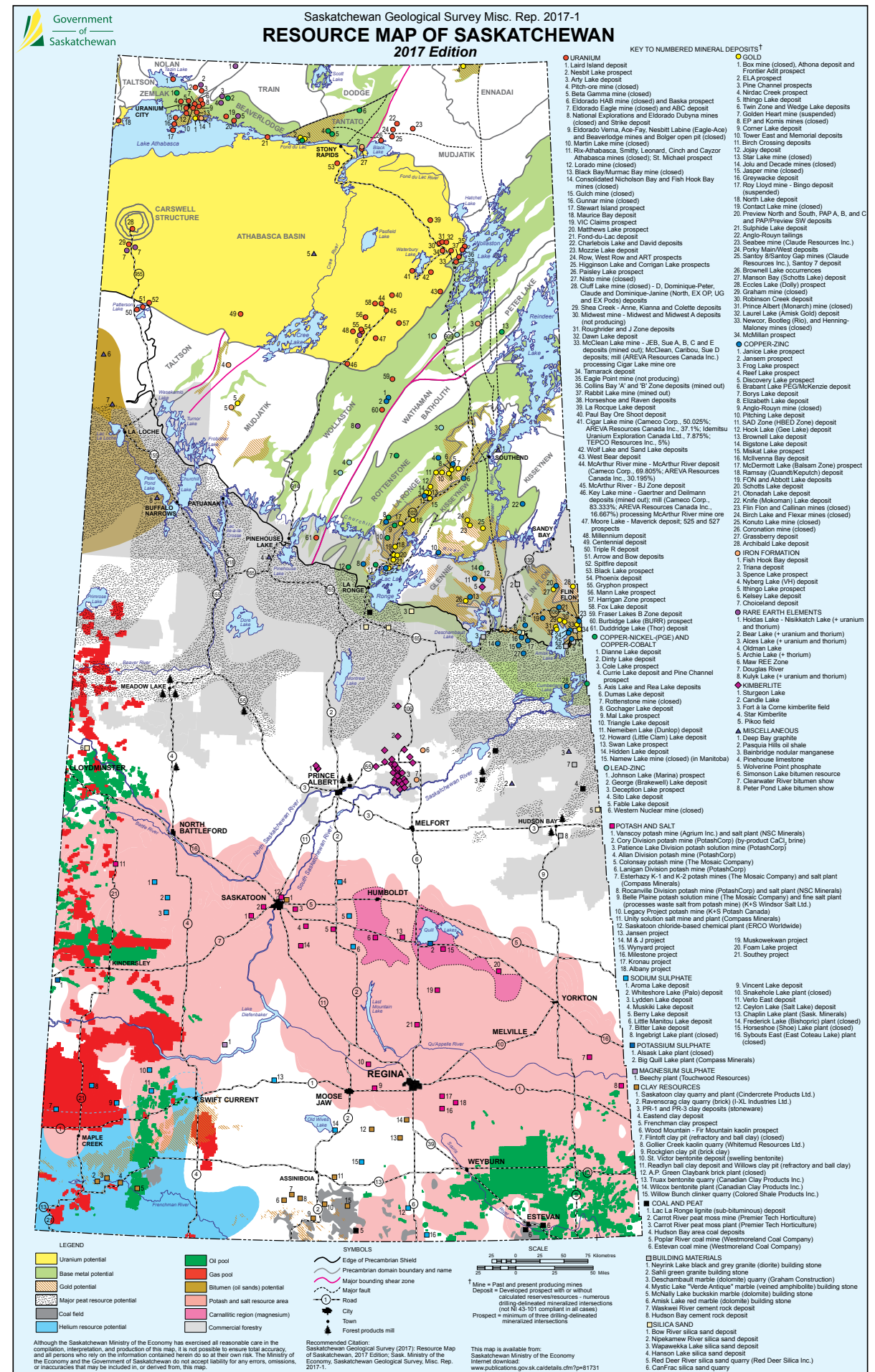
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