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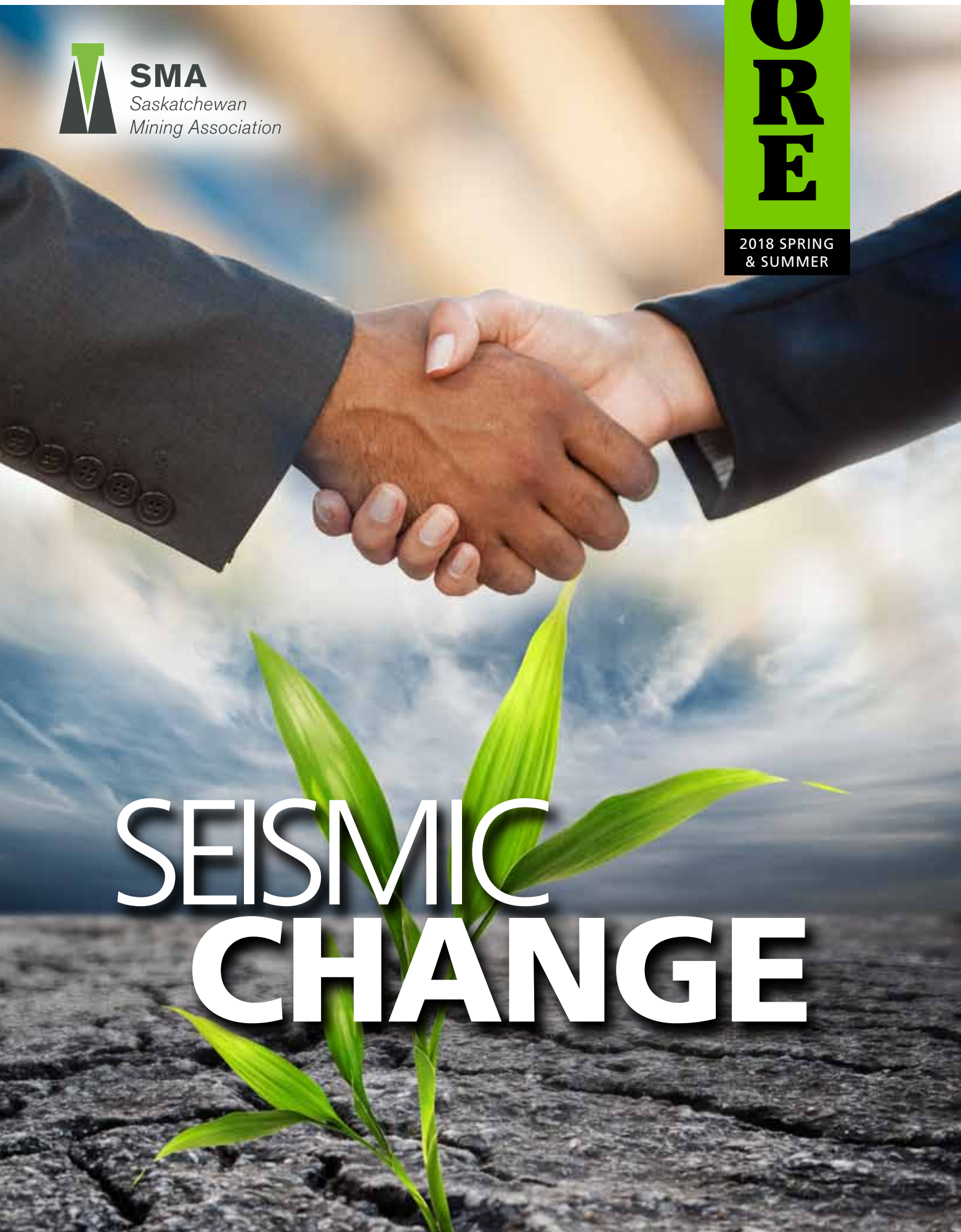

SEISMIC CHANGE

Employees Henry Hernandez of Saskatoon *(centre, left)* **and Jennifer Conrath of Ohio** *(centre, right)* **joined Nutrien executives to ring the bell on the New York Stock Exchange on the first day of trading under the company's new name.** *Photo courtesy NYSE*

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COVER PHOTO

The last year has brought significant changes to Saskatchewan's mining industry. You could say some of them were seismic. From mergers and acquisitions to renaming and rebranding, new shoots of optimism are emerging in some sectors, while others regroup in difficult markets. In this edition of ORE, we look at the global shifts now at play.

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As the saying goes, sometimes the only thing that stays constant is change. In the globally-competitive mining world, disruption is the norm.

A MESSAGE FROM SMA PRESIDENT, PAM SCHWANN

SEISMIC CHANGES COME TO SASKATCHEWAN MINING

As the saying goes, sometimes the only thing that stays constant is change. In the globally-competitive mining world, disruption is the norm. Whether it is in the actual process of mining, where we have evolved from pick and shovel to remote mining techniques and utilization of artificial intelligence, to the increasingly representative composition of the workforce, change is ever present.

While some change takes time, other change happens more suddenly. In Saskatchewan, we have seen seismic changes to company structures over the past two years. It was less than a decade ago that Saskatchewan was riding a wave of commodity price highs in both potash and uranium. However, since 2008, prices for both these commodities have drastically reduced, meaning that some form of disruption to standard operations was required for companies to remain global leaders for the long term. While commodity prices are cyclical, standing still waiting for an upcycle to return carries the risk of extinction.

This issue of ORE examines some of these seismic changes, from the "merger of equals" between PotashCorp and Agrium to form Nutrien, to the temporary suspension of uranium production from Cameco's McArthur River mine and Key Lake mill facility.

There has been positive news with other global shifts, including how reduced potash reserves in Germany ultimately meant good news for K+S Potash Canada's Bethune mine, Mosaic's acquisition of Vale's potash assets, the reliable and cost-effective production of baseload energy from Westmoreland's coal mines, and another record year of gold production from SSR Mining's Seabee Mine.

It has been dizzying trying to keep up with the changes to the names of mining companies operating in Saskatchewan — almost an "alphabet soup" in the making — as many companies have recently changed names due to rebranding or mergers and acquisitions. The eARTh story provides some insight into these changes.

The issue also reflects on the seismic changes to federal environmental legislation, particularly with respect to environmental assessments and climate change. Mining in Saskatchewan and Canada is already a world leader in terms of environment and safety performance, financial payments to governments, benefits to civil society and in being leaders in employment of Indigenous peoples and incubators of Indigenous businesses.

Mining companies require stability and a framework that encourages investment in the country's mineral potential. Constant legislative changes that impose a social agenda without due consideration to the reality of global competitiveness will ultimately result in shifting mineral production out of Canada to other jurisdictions that don't have the high operating standards that currently exist in Canada — and that is not the type of disruption that is good for Saskatchewan or Canada.

This issue, however, is not all about drastic change: stability is reflected in the articles on both the upcoming 50th anniversary of the SMA Emergency Response Mine Rescue Competition and the 70th anniversary of the Saskatchewan Geological Survey. Although, even in these articles, it is evident that evolution is a constant.

Nutrien staff and executives cheer after the bell is rung on the New York Stock Exchange. *Photo courtesy NYSE*

MASSIVE MINING MERGER A SEISMIC EVENT

Nutrien becomes largest crop nutrient company in the world

When PotashCorp and Agrium merged at the beginning of the year, after months of regulatory examination, their union became Nutrien, the world's largest crop nutrient company.

The alliance was valued at $36 billion USD, with 20,000 employees in 14 countries. It may also prove to be the second-largest agricultural company in the world, after Bayer-Monsanto, and Canada's third-largest resource company.

"We're the largest potash producer globally, the third-largest producer of nitrogen products globally, and the second-largest producer of phosphate products in North America," said Raef Sully, Nutrien's Executive Vice President, Potash.

"Nutrien also has the largest ag retail network globally, with 1,500 stores in seven countries."

The company will have its registered head office in Saskatoon, and while there will be some reductions in staffing as the company finds synergies in the wake of amalgamation, the number of corporate jobs in the city will actually increase by about 30 to 300, said Sully.

"Nutrien has six potash mines in Saskatchewan and the province will benefit from growth in the potash market," said Sully. "The market is absorbing recently completed capacity, and Nutrien is in a great position to take advantage of future growth in demand."

Growth is coming from a profound change in food requirements. Sully believes that fertilizer markets, potash in particular, are now responding to the growth in the world's population.

"As people's eating habits change and you get a growing middle class in India and China, food consumption changes. That means higher yields are needed," said Sully. In other words, the world needs to grow the fruits, vegetables, grains and protein needed to feed everyone.

"Potash is unique. If you look globally, there are markets that are not applying enough potash compared to nitrogen and phosphate. You're going to see continued growth in crops. Potash consumption has to grow by two to three per cent.

"The market continues to grow and we should see record demand of 64 to 66 million tonnes this year."

With increased demand comes better prices. In mid-2016, potash prices bottomed out at about $210 USD per short ton. More recently, Nutrien's winter-fill sales program saw product priced at $265 USD per short ton and it has since taken orders above that price.

"The merged company is well-positioned to meet the growth in global demand and look for new opportunities that we couldn't do before. For example, does the presence of the retail arm mean we can be faster at developing specialty crop nutrient products? We'll start looking at some of those opportunities.

"The other benefit is when you put two companies like this together, you expect to find opportunities to look at best practices."

That will be very important going forward, as Nutrien competes with potash in other jurisdictions.

Having a company with six potash mines, along with nitrogen and phosphate properties and an extensive retail operation also expands Nutrien's options. Sully calls it an "insulating strategy."

"The retail arm doesn't have the same margins that the fertilizer manufacturing side does, but it has much more consistent earnings," he said.

"When prices for potash or nitrogen go down, the earnings are more volatile. Earnings on the retail side tend to be more consistent. If you put the two together what you get is more consistent cash flow, which is interesting, because what it means is you probably have cash at the bottom of the cycle for the commodities that you can invest ahead of your competitors.

> "Nutrien has six potash mines in Saskatchewan and the province will benefit from growth in the potash market."
>
> **RAEF SULLY, EXECUTIVE VICE PRESIDENT, POTASH NUTRIEN**

"So, stability of cash flow is certainly one opportunity. On the right side of a manufacturing or commodity cycle we should be able to out-invest our competitors. Cash flow coming in consistently gives us opportunities for growth."

Having an extensive retail arm could also help grow Nutrien's fertilizer offerings. Sully sees opportunity in being closer to the customer, which is the grower, to understand what types of crop nutrients the company should be thinking about.

"I'm sure there are some needs out there in the market and being tied to the retail means we should get indications of what they are earlier and work with the retail research and development teams to take them to market faster."

Nutrien has an R&D team in Loveland, Colorado, and Sully sees some potentially exciting products emerging from there. He gives an example.

"One of the interesting things happening from an agronomic perspective is in the corn belt, where the amount of sulphur that has been deposited from rainwater has decreased dramatically over the last 20 years, as the EPA's (U.S. Environmental Protection Agency's) programs have decreased SO2 and SO3 emissions from industry.

"While the EPA has made the world cleaner, there has been less sulphur deposited. One of the things we think about is whether we should be trying to add sulphur. Those are the types of things that the retail arm may well help us address faster."

Before becoming Executive Vice President, Potash, Sully was President of PCS Nitrogen and PCS Phosphate at PotashCorp.

Originally from Australia, he had lived most of his life in Sydney. He holds a bachelor's degree in civil engineering and a doctorate in engineering, as well.

He worked for a firm of engineers, focusing on tall buildings and large infrastructure projects in engineering design and construction management.

"Then I joined a firm of consultants called Bain and Co. and I was part of their industrial practice, so I got some exposure to mining and resources. I was part of their team in Houston, and moved from Sydney to Houston about eight years ago . . . where the oil and gas business was headquartered.

"I left them and joined PotashCorp five and a half years ago to lead the potash expansion projects. When I came to PotashCorp we were just finishing Cory; I then helped finish Allan, New Brunswick and Rocanville."

Nutrien's potash mine and headframe at Scissors Creek.

When he joined PotashCorp, he moved his family to Chicago. He is planning to move to Saskatoon with his family when his daughter finishes high school.

"Looking after the potash assets is fantastic. I'm really excited about it," he said. "I think they're wonderful assets. There are some really good and talented people. For me it's an honour to be looking after potash. I was enjoying nitrogen and phosphate, there are some good teams there, some good assets, and it's a fun business as well.

"In terms of the merger, I'm excited about being part of Nutrien. I think it's got a great future and I hope I can be a good part of that growth story."

Nutrien's new logo appears in the lobby of the company's headquarters in Saskatoon.

Saskatchewan mining meets the challenges of changing markets

It's fair to say the last several years, or perhaps the last several decades, have presented challenges to the companies that mine resources.

Commodity markets are cyclical. Economies ebb and grow. Demand shifts and supply responds. It was ever thus, but today, as the globe becomes increasingly connected and more densely populated, Saskatchewan mining companies are performing at a higher level than ever before.

Mosaic Belle Plaine potash mine

POTASH

Fertilizer is one sector where global shifts in food production and consumption have had a significant impact.

PotashCorp and Agrium have responded by merging into a massive new company, Nutrien. The Mosaic Company has taken over the Brazilian company Vale's fertilizer interests, in a $1.5 billion cash deal and 34.2 million-share deal that closed Jan. 8. The acquisition included Vale's 300,000-acre Kronau potash project in Saskatchewan, just east of Regina.

The Brazilian portion of the deal, now Mosaic Fertilizantes, has brought more than 7,000 employees into Mosaic, said Sarah Fedorchuk, Vice President of Public Affairs and Government Relations for Mosaic Co.

"It really is an acquisition of some major assets in the South American market," she said. "It's multiple mines and facilities which produce mainly phosphate."

The Kronau property gives Mosaic "a lot of flexibility and optionality in Saskatchewan," she added.

"Saskatchewan has the best potash deposits in the world, so it definitely gives us potential to expand if and when we need it. Right now, we are still just evaluating

the assets we acquired and figuring out next steps.

"Mosaic and its predecessor companies have been operating in Saskatchewan for over 50 years. This gives us more of a window than we currently have — and we already have a century of reserves. It's confirmation Mosaic will be here and operating in the province for many, many years to come."

> "We're in a phase of a lot of change in the industry and that's been really exciting to see."
>
> **SARAH FEDORCHUK**
> **VICE PRESIDENT OF PUBLIC AFFAIRS AND GOVERNMENT RELATIONS**
> **MOSAIC CO.**

Fedorchuk said the recent shifts in the fertilizer industry come in interesting times, as many companies consolidate or readjust their focus on their core businesses. They are looking for synergies via amalgamation, and looking for ways to be more competitive in a global market.

"We're in a phase of a lot of change in the industry and that's been really exciting to see," she said.

Fedorchuk sees a higher level of optimism in the potash mining industry this year. Potash hit bottom in 2016 and saw modest gains in 2017; but 2018 dawned with considerably more optimism. Mosaic ships 50 per cent of its product overseas with Canpotex to China, India and Brazil as well as 40 other countries; the other half remains in the North American market. Both markets are ticking upward.

"We are definitely seeing price increases in different markets in the world, North America being one of them. We're also seeing that a lot of the new entrants are coming on more slowly than people originally thought. That has led to a little more optimism in the markets we're shipping to.

"All of the more established companies are finding ways to become more efficient and really push innovation."

In the same vein, K+S Potash Canada has become an even more important link in the global K+S mining chain.

The German company sees the still-new Bethune solution potash mine in southern Saskatchewan as a driver in its competitive position.

"With Bethune, we have every reason to be confident about the future because it has enabled us to sustainably strengthen the basis of our resources and production," said Michael Wudonig, spokesman for the K+S Group.

"There we have access to high-quality resources for generations to come, and therefore well beyond the lifetime of our German potash deposits."

He said K+S is using the new site in Canada to drive the international expansion of its potash business, allowing K+S to participate even more effectively in the future growth of the market.

"Bethune will also lower our average production costs," said Wudonig. "As a result, the international competitiveness of the entire K+S Group will improve."

The decision to build the Bethune mine, which came in 2011, was made due to the expectation that potash reserves in Germany will decrease in the decades ahead, he said.

"At the end of 2018, we will already be forced to shut down our Sigmundshall potash mine near Hannover, Germany, as it will no longer be economically viable due to diminishing reserves. In the 2030s, we expect another German mine to expire.

"So having Bethune in our production network gives us the possibility to stay competitive in the global potash markets."

URANIUM

While potash is seeing a resurgence in demand and value, uranium continues to lag. Uranium mining companies are tightening their belts in anticipation of a stronger market when nuclear reactors now under construction come online.

AREVA Resources has therefore refocused its business, and in the process, has also changed its name. On Feb. 16, AREVA became Orano.

Véronique Loewen, Manager, Communications at Orano Canada, said the French parent company Orano Group has restructured and divested some parts of its business.

"We used to deal in renewables, we used to deal in construction of nuclear power plants.

"They divested those parts of the business to focus on the nuclear fuel cycle, from exploration to mining, and to conversion of that fuel and recycling of that fuel.

"In doing that, they felt the old name, AREVA, did not now represent what we were. The AREVA name carried with it the fact we built nuclear power plants and that we were involved in off shore wind turbines and solar power.

"Part of the restructuring was divesting of things that are not our core business. The core business has always been nuclear fuel production, nuclear fuel services."

The company wanted a new name that reflected that focus, and chose Orano, sourced from the planet Uranus which gave the element uranium its name.

It was important to the company to be poised positively for the future, and the change seems to be working well, said Loewen.

"Projections are good. We're on par with the revenue projections we've made. It was a good move."

Cameco Corp. has adjusted to market conditions by implementing a temporary shutdown at the Key Lake and McArthur River operations in northern Saskatchewan, which began in January.

However, Cameco met the projections put forth in its outlook for the fourth quarter of 2017.

"While the market has struggled to transition, we remain resolved in our efforts to strengthen the company in the long term," said Cameco President and CEO Tim Gitzel.

"Consistent with our strategy, we have taken action to preserve the value of our tier-one assets while at the same time removing some of the lowest cost product from an oversupplied market. We have done this at a time where we have inventory and potential opportunity to purchase to fulfill our contractual commitments."

Key Lake uranium mine

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Orano Canada derives its name from Uranus, the planet that gave the element uranium its name.

DIAMONDS AND GOLD

Saskatchewan's diamond play has also seen significant changes in the last several months. The former Shore Gold has been renamed Star Diamond Corp., to better reflect the company's focus.

The renaming, which became official in February, follows an option agreement with Rio Tinto. The massive mining firm, which drilled on the Star Diamond property in December, can spend $70 million for a 60 per cent interest in the kimberlites at Fort a la Corne, Sask.

George Read, Senior Vice President, Exploration and Development, explains that Shore Gold's name had historic relevance, but it was time for change.

"Shore Gold was a producer of gold in joint venture with Cameco. That's the history, and the shore was not the shore of a lake, but a gentleman's name," said Read.

"We proposed at our AGM in September last year we would like to change the company name. We then came up with the name Star Diamond Corp. on Feb 12, when we traded the first day as Star. The name is in honour of the Star kimberlite."

Now traded under the symbol DIAM, Star Diamond has done significant evaluation on the Star and Orion South kimberlites, said Read.

"It should be emphasized that these kimberlites are unique in two ways, in that one they are very large, probably the largest continguous occurrence of kimberlite anywhere on the planet. The second point is that they contain a unique diamond population."

Sampling has shown the Star holds more than 20 per cent Type IIa diamonds, "and those are diamonds that are pure carbon with no impurities such as nitrogen or boron which can substitute for carbon," said Read. Similar diamonds occur in Orion South.

One such diamond discovery was an 11.96 carat, white Type IIa, D-colour, valued at about $12,000 USD per carat.

"That stone comes from the Star kimberlite. It goes back to the reason for naming the company after the Star Kimberlite."

Silver Standard Mining has also changed its name to reflect its growing focus on another precious metal: gold.

Silver Standard acquired Claude Resources and its primary asset, the Seabee Mine, a year and a half ago. That purchase inspired the name change to SSR Mining Inc.

SSR's projects include the Marigold gold mine in Nevada, the Pirquitas silver mine in Argentina and Seabee.

"With gold representing approximately 70 (per cent) of our revenue, the current name does not accurately reflect our business," Paul Benson, president and CEO of the Vancouver-based company, said in a statement.

"We have evolved from a silver-focused producer to an intermediate precious metals producer with three mines in the Americas. The proposed name, which includes the initials of our existing name, is a natural evolution."

> "We have evolved from a silver-focused producer to an intermediate precious metals producer with three mines in the Americas."
>
> **PAUL BENSON**
> **PRESIDENT AND CEO**
> **SSR MINING INC.**

Developing the workforce of the future

Orano McClean Lake Mill Operator Students

Education in mining does not stop at the gates of the university or technical college.

Mining companies in Saskatchewan know that developing the workforce of the future requires welcoming students to their sites, through internships, co-op placements and summer programs.

It's a win-win, because the students gain valuable experience, and the companies can identify high-potential candidates that may lead to full-time employment.

The Mosaic Company, for example, has a robust system of engaging potential employees. In 2017, the company hired 45 co-op students in a variety of roles at all three of its Saskatchewan sites.

In addition, Mosaic hired eight former co-op students last year for permanent roles. Of the roles available for typical new grads, 57 per cent were filled by former co-op students. In the past seven years, the company has converted about 16 per cent of its co-op students into permanent employees.

And this year, Mosaic launched an Indigenous summer student program, with five new positions that will begin in May.

"Mosaic's Co-op Program gives students the opportunity to get a feel for our company culture while receiving valuable hands-on experience," said Talent and Workforce Planning Manager Terin Duell.

"At the same time, Mosaic gets the benefit of welcoming hardworking and motivated students into our operations. The program allows both parties to see if permanent employment would be a good fit."

K+S Potash Canada (KSPC) typically offers practicums for summer students, particularly in the engineering disciplines.

"Because KSPC has been in project phase it's been more challenging to have students but definitely each year in our workforce plan, we look to have students," said Mary-Ann Deutscher, Senior Manager, Human Resources.

"It is truly a great opportunity for students to learn more about KSPC and mining. We also do partnerships with the University of Saskatchewan's Engineering Department for such events as their Hard Hat Ceremony."

At Cameco, this year will be a bit quieter than normal because the company has three operations in care and maintenance. Even so, the Cigar Lake operation will hire five summer students from communities closest to that operation, the Athabasca Basin region of northern Saskatchewan.

> It is important that our workforce be representative of the region where we operate.
>
> **BRUCE WALLS**
> **VICE PRESIDENT, HUMAN RESOURCES AND INDUSTRIAL RELATIONS**
> **ORANO CANADA**

"We hire students to encourage them to build capacity in business, environmental monitoring and operations to bring those skills back to the region or to Cameco after they graduate from their programs," said Cameco spokesperson Carey Hyndman.

Scholarships are another way Saskatchewan mining companies support students.

Orano Canada, for example, has provided over 300 scholarships to students in northern Saskatchewan since 1979.

Beyond scholarships, Orano provides students with opportunities to work in their offices, with their exploration teams in the field and at the mine sites.

"We see students as our future, the people who will someday be the decision makers in our industry, in our company," said Bruce Walls, Vice President, Human Resources and Industrial Relations.

Orano offers various training opportunities, including job-shadowing, internships, co-op and summer positions for students enrolled in universities or technical institutes. Orano tends to give preference to local Saskatchewan students enrolled in programs that have a direct connection to their activities, such as geology, process or chemical engineering, and environmental sciences.

However, Orano also provides a couple of positions for international students from France, where their parent company is located, through a specific program called VIE.

"Having a few students who come from a different educational background brings a different perspective to the way we approach things," said Walls.

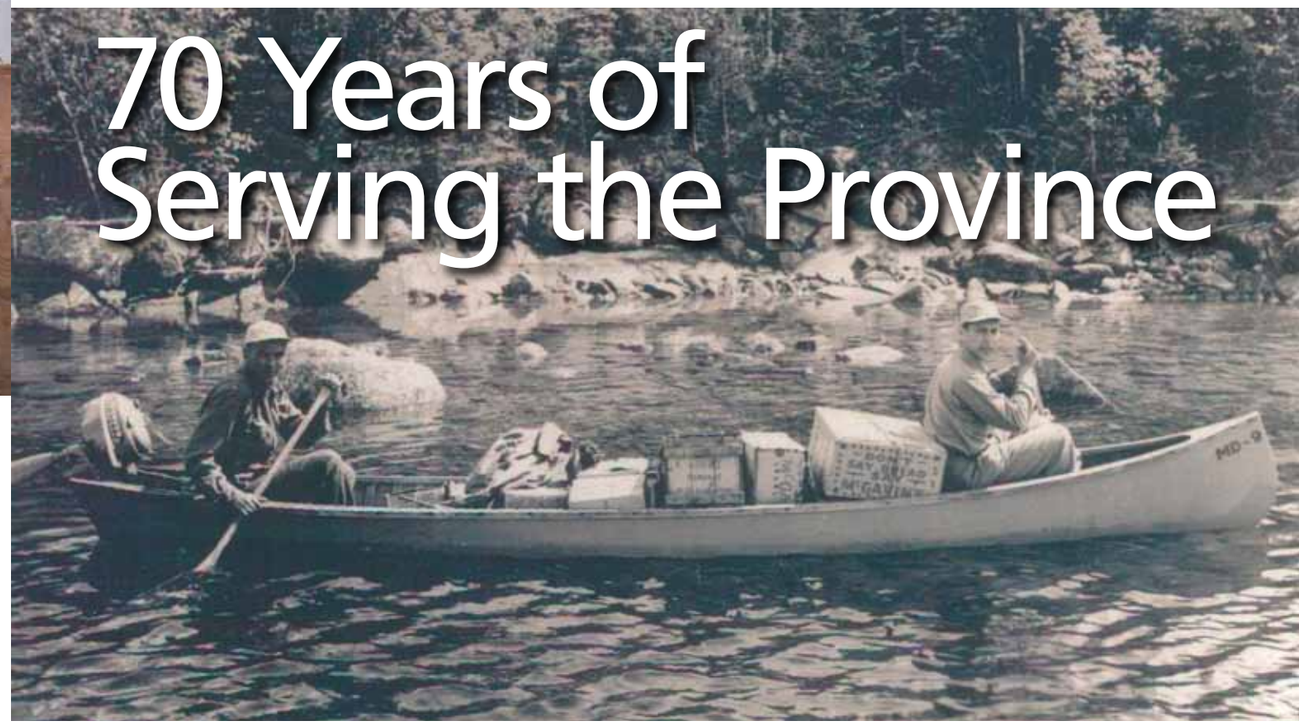
In keeping with its commitment to employ as many northern residents as possible, Orano also focuses on recruiting students from northern Saskatchewan.

"It is important that our workforce be representative of the region where we operate," noted Walls.

Whether through internships, co-ops or summer employment, the goal for Orano is to provide students with opportunities to experience real work first hand, to see how people interact in the workplace, how projects advance and how objectives are met. Students are truly immersed in the day to day of activities and can contribute to production and continuous improvement.

THE SASKATCHEWAN GEOLOGICAL SURVEY

70 Years of Serving the Province



Prospecting in Northern Saskatchewan, circa 1953

Geologic mapping in Saskatchewan dates back to the mid-1800s, when members of the Franklin Expedition followed the Churchill River through north-central Saskatchewan and documented lignite deposits in surface rocks along the way.

The Geological Survey of Canada (GSC) undertook the first formal evaluation of the province's mineral potential, conducting traverses through that region during the late 1800s. GSC geologists identified copper mineralization in the Amisk Lake area and on the north shore of Lac La Ronge (the latter became the Anglo-Rouyn mine in 1966).

The Department of Natural Resources (DNR) was created in 1930, after the federal government transferred responsibility for mineral resources to the province. Geologic expertise came from the University of Saskatchewan (U of S). The Mineral Resources Branch was created in 1947 from the mines division of the DNR, and a prospector's school was established in La Ronge, along with a prospector's assistance plan developed to encourage exploration in the province.

The Saskatchewan Geological Survey (SGS) was founded under the DNR in 1948 with a mandate to map areas of mineralization in northern Saskatchewan and carry out geological surveys in areas of potential oil and gas and other economic mineral resources in southern Saskatchewan. Resident geologist offices were established at Uranium City and in Prince Albert, and the office of the chief geologist was established in 1950.

> Expanded geological framework for the province paved the way for increased exploration activity for decades.

The SGS was divided into the petroleum and natural gas, Precambrian geology and industrial minerals branches. The focus was on mapping economically-prospective areas of the exposed Canadian Shield to produce geologic maps at a scale of one inch to one mile, and compiling mineral occurrences and exploration data from assessment work reports.

By 1960, the SGS had eight field parties mapping, while the industrial minerals branch undertook research on bentonite, pumicite, sodium sulphate, silica sand, uranium and germanium in lignite, marl, kaolin and potash deposits in the southern part of the province.

In 1964, the Precambrian core repository and the resident geologist and mining recorder office were established in La Ronge. A large influx of federal funds in the mid-70s enabled the SGS to map more ground, at better resolution, and to develop an economic geology division. The federal cost-sharing programs ended in the 1980s, but the resultant expanded geological framework for the province paved the way for increased exploration activity for decades to come. Numerous important deposits such as the Rabbit Lake and Cluff Lake uranium mines were discovered during this time.

The SGS, which is housed in the Minerals, Lands and Resource Policy division of the Ministry of Energy and Resources, has changed considerably over the past few

decades. Hip chains and Mylar overlays have given way to in-field data-collection tablets and GIS-based technologies, enabling geologists to interpret their observations in real time, in the context of multi-layered data sets such as geochemical, geophysical and radiometric data.

The SGS is also continuing to improve the way geoscience data is delivered to the public, by digitizing all historic assessment data, and through the development of the Saskatchewan Mining and Petroleum GeoAtlas, an award-winning online data dissemination portal.

Collaboration with Saskatchewan's universities and the GSC are still going strong and, more recently, partnerships with the geological surveys of South Australia, China and India have enabled personnel exchanges, sharing of expertise and best practices, and helped to develop capacity in a number of areas from field mapping to 3D modelling.

The SGS staff is proud to have provided the geoscience foundation that helped Saskatchewan become a top global mining jurisdiction and look forward to playing a key role in helping the province realize the full potential of its mineral sector for the next 70 years and beyond.

Provided by Saskatchewan Geological Survey, Ministry of the Economy

Students from a 1977 Prospector's School learning to pan for gold. *SGS archives*

SMA expands education outreach to engage Indigenous students

Interesting young people in the mining sector and showing them the great potential for future careers in mining is important to the Saskatchewan Mining Association.

An important tool in the SMA's Education Outreach portfolio has been the development of curriculum-correlated, mineral-resource related lesson plans that are primarily focused on Grades 4, 7 and 10 sciences, but which can be modified to use in various grades.

With a growing Indigenous population that will represent a significant part of the next generation of mine employees and business owners, the SMA has recognized the need to make their lesson plans more relevant to Indigenous students. This was particularly necessary as studies of First Nation students* have consistently demonstrated that they have a lower level of science literacy than their non-Indigenous counterparts.

In addition to addressing the Call to Action 10, as set out by the Truth and Reconciliation Commission regarding educational gaps between Indigenous and non-Indigenous students, "there is also a business imperative to engage Indigenous students about mineral resource development," said Pam Schwann, President, SMA.

With these factors in mind, the SMA applied for and was approved for a grant provided by the International Minerals Innovation Institute (IMII).

"Everyone's learning improves if the material is presented in a way that is more meaningful to them," said Schwann. "We felt that if we were able to work with Indigenous educators and modify our lesson plans or create new lesson plans to incorporate Indigenous perspectives and then present those lessons in a culturally appropriate manner, we would capture the interest of students."

Many Indigenous teachings are taught and learned on the land, and Schwann noted "there are few topics which lend themselves better to land-based learning than earth sciences and mineral resources, so we are very excited about this opportunity."

The SMA will be working closely with the Saskatoon Tribal Council as well as the Office of the Treaty Commissioner, which both supported the proposal, in developing and piloting this material. After the first year, additional tribal councils and school divisions across Saskatchewan will be approached to participate in workshops and provide feedback about the indigenized lesson plans.

From the Truth and Reconciliation Commission (TRC) Report

TRC CALL TO ACTION 10:

We call upon the federal government to draft new Aboriginal education legislation with the full participation and informed consent of Aboriginal peoples. The new legislation would include a commitment to sufficient funding and would incorporate the following principles:

i. Providing sufficient funding to close identified educational achievement gaps within one generation.

ii. Improving education attainment levels and success rates.

iii. Developing culturally appropriate curricula.

iv. Protecting the right to Aboriginal languages, including the teaching of Aboriginal languages as credit courses.

v. Enabling parental and community responsibility, control, and accountability, similar to what parents enjoy in public school systems.

vi. Enabling parents to fully participate in the education of their children.

vii. Respecting and honouring Treaty relationships.

*** References:**

Voice, Vision and Leadership: A Place for All - The Joint Task Force on Improving Education and Employment Outcomes for First Nations and Metis People (2013), Gary Merasty, Rita Bouvier, Don Hoium

Realizing the Potential: Priority Investments in Saskatchewan's First Nations and Metis People, (2013) Conference Board of Canada Honoring the Truth, Reconciling for the Future, Final Report of the Truth and Reconciliation Commission

Students participate in a robotics competition.

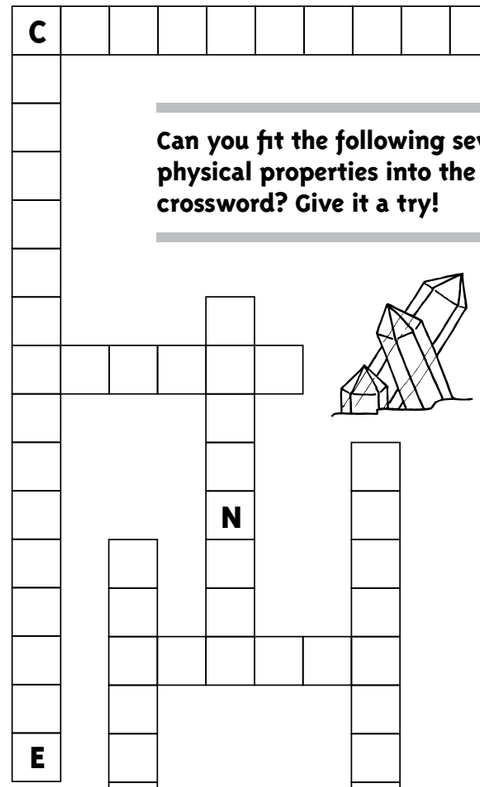
SMA supports the following:

- World Robotics
- World Mining Competition
- WIUGC 2018
- University of Regina Environmental Engineering Scholarship
- University of Saskatchewan Environmental Engineering Scholarship
- Saskatchewan Polytechnic Power Engineering Scholarship

FUN & GAMES

Mineral Properties

Geologists use a number of tests to determine the physical properties of minerals. Those properties help to identify the mineral.



Can you fit the following seven physical properties into the crossword? Give it a try!

WORD BANK

COLOUR
CONDUCTIVITY
CRYSTAL STRUCTURE
HARDNESS
LUSTRE
MAGNETISM
STREAK

COLOUR is a property commonly used to describe minerals, but it is not a very good one to use to identify them because many minerals come in a variety of colours.

CONDUCTIVITY is the property that allows a mineral to conduct electricity.

CRYSTAL STRUCTURE is the property of a unique arrangement of atoms, ions or molecules in a mineral. When minerals have the time and space to "grow" or crystallize, they can develop regular shapes and patterns because of crystal structure.

HARDNESS is the property that allows a mineral to resist being scratched.

LUSTRE is the property that indicates how much the surface of a mineral reflects light.

MAGNETISM is the property that allows a mineral to attract or repel other magnetic materials.

STREAK is the property of colour when a mineral is in powdered form.

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CREATING CAPACITY, BROADENING SCOPE

Saskatchewan Indigenous economic development corporations among the strongest in Canada

It may have been a long road, but today Indigenous business is just business.

That's the view of Sean Willy, CEO of Des Nedhe Development Corp., the economic development (ED) arm of English River First Nation.

Des Nedhe, Athabasca Basin Development Limited Partnership. and Kitsaki Management Limited Partnership are three of the top 10 Indigenous EDCs in Canada. The three are being invited by Indigenous groups across the country wanting to learn from the models they have created.

Athabasca Basin Security is among the many Indigenous businesses in Saskatchewan.

The springboard was the uranium industry in Saskatchewan's North, as Cameco Corp. and AREVA, now Orano, engaged Indigenous and northern businesses and employees in their operations. The drive to involve Indigenous peoples has subsequently also moved south.

The success of the EDs is still something of a well-kept secret outside industry, noted Willy.

"Saskatchewan should take pride in this. This is what the uranium development hearings wanted to achieve. They wanted to create some capacity."

The hearings, officially known as the Joint Federal-Provincial Panel on Uranium Mining Developments in Northern Saskatchewan, were struck in 1991. Two years later, Tron Power, a Des Nedhe company, was created to provide infrastructure, construction and engineering services to the mining industry.

Des Nedhe is also involved in Mudjatik Enterprises, a joint venture of First Nations and Métis communities managed by Tron. It acts as vehicle to create partnerships between Métis and First Nations groups to promote training, development and economic advancement.

Mudjatik Thyssen Mining (MTM) is another joint venture, created to undertake mining contract work in northern Saskatchewan. MTM is managed by Tron and brings capital and employment to more than 13 communities in the north.

Des Nedhe also has investments in a variety of other businesses, including retail outlets, Northern Resource Trucking (NRT) and Athabasca Catering. More recently, they've looked outside the box.

"We're investing in things like JNE, a welding company, which is also involved in resources. We bought into Creative Fire, which is now changing the definition of Indigenous business; it's a marketing, communications, government relations firm. We're broadening and diversifying.

"It's part of Indigenous principles, where to use what you have to leverage and go somewhere else. We're maximizing our opportunities within our traditional territories, and using the knowledge and revenues to invest in non-traditional business."

Kitsaki, owned by the Lac La Ronge First Nation, which encompasses six northern communities, has an extensive portfolio of several limited partnerships, such as Asiniy Gravel Crushing, Athabasca Catering aand Canada North Environmental Services.

One of its best-known joint ventures is Kitsaki Procon, which provides mining and industrial services.

ABDLP is another ED with a wide range of business interests. Athabasca is invested in partial or complete ownership of 12 companies, and is owned by seven communities and EDs.

ABDLP, at its beginning in 2002, had a high reliance on construction in the uranium industry and was 100 per cent focused on the north. Since then, it has added Athabasca Basin Security, Athabasca Road Services, Points Athabasca, and is also a partner in MTM joint venture.

By 2006, ABDLP was already reinvesting profits in other companies; and five years later, evolved into a pure investment company. In the last three years, it has also made investments outside the resource industry, including a Pepsi franchise with a wide territory and a recreational vehicle dealership.

File Hills Qu'Appelle Tribal Council has more recently developed its economic development corporation, FHQ Developments Ltd. File Hills includes 11 First Nations in the southern part of the province in Treaty 4 territory.

Founded in 2010, FHQ has already formed eight partnerships, including Great Plains Contracting LP, formerly Points Athabasca FHQ Contracting. Great Plains, in partnership with Points Athabasca and Graham Construction, is a general industrial contractor offering services ranging from earthworks and concrete installation to underground maintenance.

Since its launch, however, FHQ has also become involved in oil and gas drilling, a Swift Current hotel, and even electrical generation through an agreement with SaskPower.

The Saskatoon Tribal Council, with seven member Nations, has forged a close relationship with Nutrien (formerly PotashCorp), which has committed to allocating 30 per cent of its local capital maintenance spend to Indigenous suppliers, or suppliers with a similar commitment.

Its First Nation members, including Muskeg Lake and Yellow Quill with their urban reserves in Saskatoon, are also active in economic development. Another member Nation, Mistawasis, through its Misty Ventures corporation, has recently purchased Xtreme Mining, and also owns a gas station in Leask, a storage and container company, a concrete firm and an engineering company, among others.

Many of the Indigenous business organizations, including ABDLP and Des Nedhe, are open to investing in other industries, and to working with other First Nations across the country, looking for further relationships and opportunities.

"We consider ourselves a Tier One Indigenous economic development corporation, because we have independent governance, we have progressive community support and we have a strong base of revenues and opportunities," said Willy.

"Companies want to work with us because we offer good customer service. Being First Nations-owned only gets you through the door."

DEMODAY 2018

First-ever DEMOday is an opportunity for supply chain companies to pitch new innovations directly to Saskatchewan's major mining companies.

Prairie Machine & Parts' PapaBravo vehicle is an example of innovation in mining.

The Saskatchewan Mining Supply Chain Forum has become a destination showcase for new and innovative technology, attracting both mining companies and suppliers. One of the most anticipated events at this year's forum is DEMOday.

Launched by the International Minerals Innovation Institute (IMII) in co-operation with the Saskatchewan Industrial and Mining Suppliers Association (SIMSA), DEMOday is designed to encourage greater collaboration between supply chain companies and mining companies.

"Innovation requires collaboration," says Al Shpyth, executive director of the IMII. "A supply chain company may think it has a great innovation, but may not be sure it's feasible, or maybe they don't have the resources or infrastructure to move it forward. This is when innovations can fall into the 'valley of death.' DEMOday gives supply chain companies an opportunity to put their innovation in front of their target market, and that opens the door for earlier collaboration."

Supply chain companies had until February to send in their innovations. Entries had to be economically viable, innovative technologies that meet demonstrated industry needs and are not already commercially available. It could be either a product or a service, and it had to involve new technology, or combine existing technologies in a way that results in new intellectual property, or use technologies to develop new/improve existing products, services or processes.

"We were really pleased with the range of applications," Shpyth says. "We received entries that speak to various areas of interest, including automation, safety enhancement, advanced materials, energy efficiency, water treatment and environmental knowledge."

> "DEMOday is a new way for the industry and the supply chain to collaborate."
>
> **AL SHPYTH, INTERNATIONAL MINERALS INNOVATION INSTITUTE**

Each application underwent a merit-review selection process involving representatives of IMII member companies. If two subject matter experts from different IMII member companies selected an innovation, it was chosen for DEMOday.

On April 10, the selected companies will have five to eight minutes to pitch their innovations directly to the interested subject matter experts. The sessions are private to ensure confidentiality of intellectual property. For the supply chain company, the ultimate goal is to secure financial and/or in-kind support to help move their innovation to the next level, such as a prototype, a pilot test or proof of concept.

"DEMOday is a new way for the industry and the supply chain to collaborate, and we're pleased to be working with SIMSA to help facilitate that collaboration," Shpyth says.

New Innovation Awards

In addition to DEMOday, the IMII and SIMSA are also introducing the Innovation Awards at the 2018 forum, with the first-ever award for 'Best Prototype' announced on April 10.

"How often do supply chain companies get a chance to put a prototype into the hands of their target market?" says Eric Anderson, executive director of SIMSA. "Whether or not you win the award, just submitting your prototype means it's carefully reviewed and discussed by experts from the companies you want to sell it to. That's a huge opportunity."

The winner of Best Prototype will represent the supply chain's most innovative emerging technology for the minerals industry. To earn the honour, the winning prototype will solve a significant problem and offer a strong value proposition, such as an advantage over existing technologies in reducing GHG or air emissions, minimizing land disturbance, improving waste management practices, improving energy efficiency, reducing water use or enhancing safety.

Together, the IMII and SIMSA are hoping the inaugural DEMOday and Innovation Awards will encourage a culture of innovation and greater collaboration between supply chain companies and mining companies.

Sweeping changes coming to the regulatory environment

Starting in 2016, Canada's federal government has been working toward significant revamping of the country's environmental regulations, ranging from carbon taxes to protecting species at risk.

While Saskatchewan's mining industry is supportive of reducing GHG emissions, the rapid implementation and considerable sudden impact of the proposed new policies and regulations are posing some challenges.

"Constant change in legislative frameworks causes instability that breeds investor uncertainty," says Pam Schwann, President, Saskatchewan Mining Association.

Among the changes are the Carbon Pricing Backstop, Coal Effluent Regulations, Species At Risk Act listings, Clean Fuels Standard, Environmental Impact Assessment, Fisheries Act, Navigation Protection Act and the Metal Mining Effluent Regulations. Some are in place, while others are still in the process of approvals. And, some affect mining more than others.

The Mosaic Company's Jessica Theriault, Director of Environmental Affairs for the Potash Business Unit, is among the mining officials who have participated in meetings with various levels of government, discussing the various impacts of the changes.

"We are supportive of Saskatchewan's Climate Change Strategy because of the flexible compliance components," said Theriault. "But the timelines are tight. In the meantime, we are working with the Ministry of Environment in Saskatchewan on their climate change strategy and in parallel with Environment and Climate Change Canada in Ottawa on the details of their carbon pricing backstop agreement."

The backstop agreement is a carbon pricing system applied in jurisdictions, including Saskatchewan, that don't have federally approved systems in place aligning with the Government of Canada's benchmark levels.

> "We are supportive of Saskatchewan's Climate Change Strategy because of the flexible compliance components."
>
> **JESSICA THERIAULT**
> **DIRECTOR OF ENVIRONMENTAL AFFAIRS - POTASH BUSINESS UNIT**
> **MOSAIC**

She points out that the proposed strategies and policies have the potential for positive impacts on environment. However, there are also concerns from a trade and competitiveness standpoint, on health and safety and technical perspectives, and they come with a significant administrative burden and financial impact, a concern shared by all SMA member companies.

Saskatchewan Environment Minister Dustin Duncan said he is hearing concerns from industry about the "stacking effect" of the many regulations coming from the federal government.

"The other concern that we have is we certainly share the concern of industry that they will be regulated, but they would much rather be regulated by the provincial government rather than the federal government," he said. "We worked with a number of sectors in the province to try to first and foremost achieve equivalency where there are federal regulations so we would have the ability to regulate here in the province."

The province has its own document, entitled Prairie Resilience, which puts forward various climate change and emission reduction initiatives. Duncan's priority is that the province's regulations still allow industry to be competitive, and that's particularly important for the mining sector.

"Most of the competition for the Saskatchewan-based mining sector is not in the rest of Canada; it's around the world. We need to not only take into account what's happening at the federal level, but what is happening around the world in terms of regulations for those global competitors."

Duncan said the province has worked with the federal government for several years on coal, well before the climate change initiatives were introduced. The government hopes to achieve equivalency with federal regulations by the end of 2018, and have its own regulations in place.

He also noted that Saskatchewan's mining operations are more efficient than global competitors, and that should be reflected in regulations and taxes.

"We don't think the federal carbon backstop recognizes that. The sector in Saskatchewan is much more efficient already when it comes to their emissions, compared to their global competitors. We want to have a system in place that does reduce our emissions but doesn't put our companies at a competitive disadvantage to those competitors around the world, that will not (need to follow) regulations to reduce their emissions by as far as our federal government is wanting to move."

Dale Huffman, Vice-President of Health, Safety, Environment and Regulatory Relations at Orano, said the uranium sector, along with other mining sectors, is scrambling to understand the many implications of the new regulations. Primary is understanding how changing the environmental assessment (EA) now in place to an impact assessment (IA) will affect industry.

"The biggest change proposed for us is taking EA out of the hands of our nuclear regulator and moving it to a central agency," he said. "The broadened scope of the (new) impact assessment has pros and cons. There have always been socio-economic considerations in EAs. They're being made more prominent in the IA. Generally, they're a good thing. When you talk about sustainability you can't just talk about the environment, you have to talk about the impacts on society and economics."

There is, however, some concern around the long timelines connected with new mining development. The IA extends the process to 600 days or more of federal review time, but is preceded by a separate 180-day consultation that includes seeking input from Indigenous groups.

Mark Wittrup, Vice-President Environment and Regulatory for Clifton Associates, said the 180 days could make bringing new projects on stream more onerous, and the regulations do not spell out the impact on the mine proponents. Wittrup would like to see greater clarity in the IA proposal.

"The First Nations, for the most part, are interested in participating as valued members of the economy and moving forward, but the discussions don't really talk about how that's going to happen."

Theriault gives the new proposed federal clean fuels standard as another example of a regulation mining companies must be aware of.

"The proposed clean fuels standards include changes to the ingredients of the fuels that we use at our sites in various pieces of equipment," she said.

"Ultimately these fuels will cost more to make, which we can assume will be passed along to us, the customer. The concerns are more than financial. From a technical perspective we are looking into how these changes will impact the efficiency of our operating equipment.

"Diesel, for example: there is uncertainty as to how will that new diesel will burn underground in our mine vehicles, not only from an efficiency standpoint, but also from a health and safety standpoint regarding particulates."

Mining companies hope to be ready for the environmental regulations, but it will take time and effort.

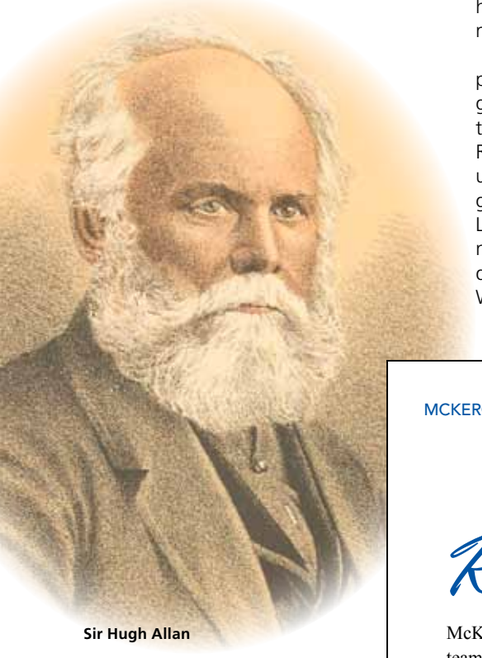
"The mining companies not only need to be aware of the various regulatory schedules and opportunities for stakeholder engagement," said Theriault, "but also how each of the proposed changes could impact their sites, both from a technical and financial standpoint."

Westmoreland Coal Co. reclaimed land near its southern Saskatchewan mine.

How Saskatchewan mines get their names

Some mine names are easy to understand, particularly in the southern half of the province, where most are named after nearby communities. These communities were often named after people connected to their settlement or the arrival of the railway in the area.

Nutrien's Allan potash mine takes its name from the town of Allan, which was named after railway magnate Sir Hugh Allan. The Lanigan potash mine can trace its name back to a railway freight traffic manager, and K+S Bethune to a railway engineer. The village of Jansen (and site of BHP's Jansen Potash Project) was named after a former Nebraska state senator who helped establish a Mennonite colony here.



Sir Hugh Allan

The Rocanville potash mine goes back to the settlement's first postmaster, Auguste Henry Rocan Bastien. He was a colourful character who served with the Hudson Bay Company for 22 years before becoming one of the area's first homesteaders, an achievement he recognized by naming the settlement in honour of himself.

Mosaic's Esterhazy potash mine can also trace its name back to a larger than life character. Count Paul Esterhazy, who was actually born Johann Packh, was the illegitmate son of a Hungarian noble family. He made a living helping Hungarians resettle in the Canadian west.

Other mine names have been around so long they've developed multiple histories. The Bienfait mine, today part of the Westmoreland Coal Company's Estevan Mine operation, has been supplying coal since 1905. Local residents claim the town was named by French Canadian railway workers for a job "well done" (bien fait). CPR archives, however, show it was named after Antoine-Charles Bienfait, a financier who helped introduce CPR shares to European money markets.

In northern Saskatchewan, mine deposits are often named by the prospectors, geologists and surveyors who discovered them, such as Cameco's Cigar Lake and Rabbit Lake sites. The province's largest uranium operations are named after nearby geological features—Cluff Lake, McClean Lake and McArthur River, which in turn are named in honour of Saskatchewan residents killed in action during the Second World War.

SSR Mining Inc.'s Seabee gold mine's name also comes from the mid-century prospecting era, but has a slightly different origin. It is named for an amphibious airplane that prospectors flew in the 1940s and 1950s. The Seabee was a popular bush plane and air ambulance in Canada, Norway, Sweden and the United States.

There's little mystery behind the naming of Uranium City or even the lesser known town of Goldfields, centre of a short-lived (1939-42) northern gold mining boom. Some names are rooted in Indigenous folklore, such as the Beaverlodge mine (also known as the Eldorado mine) near Uranium City. It was named after the lake and surrounding area, which is dominated by a spectacular height of land called Beaverlodge Mountain. The mountain was said to be the home of a giant beaver, who was responsible for the land dam that created Beaverlodge Lake.

Mine names tend to evolve over time, but if you dig deep enough, you'll find something connecting each mine to a specific time and place in Saskatchewan's history.

Rocanville team members Allan Kingdon, Herman Devr, Conrad Plante, Del Stainer, Nick Asmundson and Rus Sakundiak participate in a mine rescue challenge in 1971.

PROVINCIAL EMERGENCY RESPONSE/MINE RESCUE COMPETITION:

HALF A CENTURY OF EXCELLENCE

When teams from most of Saskatchewan's active mines gather in Moose Jaw on June 2 for the Saskatchewan Mining Association's Emergency Response/Mine Rescue Competition, they'll be celebrating a remarkable milestone: half a century of provincial mine-rescue competition in Saskatchewan.

The competition, born in 1968, was inspired by the first Dominion Mine Rescue Competition, held in the centennial year of 1967. A team from Eldorado Mining and Refining Ltd. represented Saskatchewan at that event, and shortly thereafter, the SMA's Industrial Minerals Committee proposed that, beginning in 1968, active Saskatchewan mines participate in a provincial competition, the winner of which would advance to the Dominion competition.

Thus began the competition that has now stretched to 50 years, long outliving the Dominion competition, last held in 1986. Over those years, events, rules, and venues have changed. While Regina and Saskatoon have been the most common locales, Yorkton and Estevan have also hosted, and this year, for the first time, the competition will be in Moose Jaw. (In 1973 the competition was actually held underground, at the Sylvite of Canada mine site in Rocanville.)

Originally, a mine problem was the only event. First aid was first judged in 1977. Bench-test proficiency and firefighting made their appearance in 1983. In 1991, the same year the competition was held in Estevan, a surface rescue problem was added, reflecting the growing number of surface mines competing. Today, there are surface and underground categories for all events: first aid, fire fighting, proficiency, practical skills, and the mine problem.

Kevin Huber, a long-time co-ordinator of the mine problem, who has worked with both Cameco McArthur River and Mosaic Colonsay, says one change over the years has been more emphasis on realism, ensuring that challenges faced by the teams reflect the kinds of problems they encounter in the real world (unlike, for example, one early competition where the first aid challenge was patching up people involved in a bar fight).

The fact that this immensely complicated endeavour has successfully reached the half-century mark is a tribute to the dedicated competition committee. Work on each competition begins two months after the previous competition ends. As committee member (and former chairman) Chris Stansfield from Orano Canada puts it, "Every year brings a new adventure, and yet it keeps happening, and it keeps happening, to the outside eye, flawlessly."

The committee is devoted to the task because, as James Ferstl, 2018 chair who hails from The Mosaic Company, puts it, "It's all about the miners, and making sure that those individuals and those teams are prepared. We train, and we equip our teams with equipment, in the hopes of never using it. The competition is the closest you can get to actually having an incident on your site without having an incident."

The stress competition puts teams under is an important part of making the scenarios they must deal with as real as possible.

Of course, the competition is also a way for team members to both learn from each other and demonstrate for the public, and their families, their capabilities and professionalism. (In Saskatchewan, there are many examples of mine rescuers who attended the competition as a child and grew up to follow in a parent's footsteps.)

There's one other important benefit the competition offers besides challenge, training, and experience: camaraderie.

"Mine rescue teams are asked to enter potentially very dangerous situations," says Neil Crocker, the province's Chief Inspector of Mines from 1999 to 2014, and involved in mine rescue since 1969. "A competition where the competitors get together, eat, drink, and dance, while being lauded and awarded trophies, builds community.

"When you want someone to run into the fire, train them properly and give them a community to relate to."

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

LARRY LONG
VICE PRESIDENT, OPERATIONS, POTASH
NUTRIEN

Larry Long grew up on a dairy farm in New Brunswick, but the beasts that fascinated him as a child were much larger — and older — than the average cow.

Dinosaurs.

The Mesozoic-era books his mother bought him fuelled the self-described science geek's desire to dig.

To study dinosaurs for a living, "you had to get a degree in geology, and then get a master's in paleontology," said Long.

He attained his geology degree at the University of New Brunswick, and then he dove into a paleo course. But because the class was geared for the oil and gas industry he found himself studying microfossils, tiny prehistoric creatures that were, frankly, not nearly as exciting as dinosaurs.

Long decided to switch gears, and a miner was born.

Today, he is Vice President, Operations, Potash for Nutrien, the company recently formed by the merger of PotashCorp and Agrium. Along his career path, Long has touched nearly every metal or stone, base or precious, mined in Canada.

Not to mention concrete.

The concrete drilling came after following his wife, Sue Verhille-Long, to Fredericton after they graduated from the university where they met.

Long had first started at Noranda, working on an exploration team in northern New Brunswick, seeking gold and base metals. But when Sue got "the better job" as a chartered accountant in Fredericton, Long followed her, landing at 3D Geo.

> "We thought Saskatoon probably fit our family the best."
>
> **LARRY LONG**

"They wanted someone to supervise a drilling program. We were drilling in the Mactaquac Dam. I had supervised diamond drills for Noranda when I was there for the two years. They (3D) had a very specialized request because they were actually drilling through the structure of the dam itself."

That ended in 1991, when the mining industry was hit hard by the economic downturn and Long's company was forced to lay off geologists and engineers. He went to a potash mine in New Brunswick owned by Potacan and was there for six years until the mine flooded and was shut down in 1997.

"That was right after Bre-X," remembered Long. "The mining industry was really in tough shape. There was no money being invested at the time."

Yet he landed another job, this time on Baffin Island at Nanisivik, at a lead-zinc mine owned by Breakwater Resources, 730 kilometres north of the Arctic Circle. When he arrived in August 1997, snow covered the ground. "The day we landed, it was 20 below," said Long.

He joined as chief geologist and later became the production co-ordinator until the mine shut down in 2001, having run out of reserves. He returned to New Brunswick and was hired by BHP Billiton, going to the Ekati diamond mine near Yellowknife.

He learned the intricacies of open pit mining, and more. "I did a lot of work with the Aboriginal community and public relations, communications, and interactions. I had by far the largest proportion of Aboriginal workers at the site. It was a tremendous learning experience."

The next change was family-driven. The Longs have three children; Dylan, 26; Nigel, 23; and Gabrielle, 17. In early 2006, Dylan was ready for high school, and the Longs wanted to move to a larger centre with more opportunities, including sports and other activities, for all three children.

"It was a good time in the mining industry, so I had lots of interviews and lots of offers. We thought Saskatoon probably fit our family the best."

Long joined PotashCorp as mine general superintendent at the Allan mine. He became general manager in 2011, before eventually becoming GM at the newly expanded Rocanville operation. On January 2, he became VP of Operations, Potash for the newly-formed company Nutrien. Long is now right in the thick of merging two company cultures.

He has six mining operations and more than 2,500 employees under his leadership, as part of the world's biggest potash group. He is enthused about the growth he sees ahead, and says the merger is great for both companies: PotashCorp attained a huge retail network, and Agrium a much larger, steady supply of potash.

"I don't know if everyone in Saskatchewan realizes what a big company this is," he said. "It'll be the world's largest provider of crop nutrients, inputs, and services in the world."

He is incredibly busy, but also very focused on his family. He once played and coached hockey, but with the increasing demands of his professional life, he has since used his rare personal time to support his wife and kids.

"I like watching my kids play sports," he said simply, noting his sons once played hockey and other sports, while his daughter still is involved in soccer and basketball.

In summer, Long golfs; an intense focus on the little white ball relaxes the work mind, he notes. Both he and his wife are both sports lovers and come by it honestly.

"Growing up in New Brunswick," he added, "you grew up playing every sport, or your community wouldn't have a team."

Perhaps that's where his team spirit, at work and at play, had its origins.

Branding one of the biggest agricultural companies on Earth

When PotashCorp and Agrium Inc. merged in January, they created the world's largest provider of crop nutrients, inputs, and services on Earth.

Nutrien.

Enormous it may be, but Nutrien has deep grassroots connections — to the farmers it serves, the communities it operates in, and its long history on the Canadian Prairies.

Its new logo and tagline had to reflect all of that, and it all started, appropriately, with Nutrien's own employees.

"The name itself stemmed from an employee contest we ran. We wanted to engage staff in this process," said Tyler Dunn, Nutrien's manager of external communications. "We got over 4,000 entries from across the companies, so that was great. People were definitely excited to be involved."

The names that emerged from the contest were both thoughtful and interesting, resulting in a long process of elimination and debate to arrive at the final winner.

"We landed on Nutrien, and that name was provided by Henry Hernandez in Saskatoon, and Jennifer Conrath from our Lima, Ohio location. We like Nutrien because it stems from the word nutrient, which is core to what we do."

Hernandez and Conrath were rewarded by being flown to New York and ringing the bell at the New York Stock Exchange when Nutrien was officially listed under its new identity.

Before that could happen, however, the company went through dozens of logo iterations and styles with help from a creative agency.

The new Nutrien logo consists of primarily lower case letters with rounded forms, expressing a friendly, accessible yet modern business. The upper case N contains two stems to create a distinctive leaf icon, referring to the company's agricultural core business, and to the two companies that joined to form one. The green colour scheme indicates growth, newness and, again, the core business.

"It's a bit of an extension of the colour schemes we had with the two companies, but fresher," said Dunn.

As the company describes it, "it signifies the growth and aspirations of our promise, our essence and our values."

The tagline has also changed and it's an important part of the logo as well, said Dunn: Feeding the Future.

"It defines the vital role our company plays in providing nourishment for the world's growing population, as well as the communities where we operate."

The logo already decorates the corporate offices in Saskatoon, Calgary, Northbrook, Ill. and Loveland, Colo. Rolling out the new branding to the rest of company's facilities will take some time, given the number of facilities and their geographic reach.

"Now we're getting into our production facilities, including potash mines, from hard-hat decals to the tops of the headframes," said Dunn.

Beyond the corporate offices, Nutrien also has locations throughout the United States including nitrogen and phosphate facilities, as well as distribution warehouses.

The rebranding process also includes rolling stock. "At some point you'll see green railcars across the Prairies with the Nutrien name on them. We're rebranding those, too," said Dunn.

ORANO: Inspired by a heavenly body

If you are going to rename a nuclear fuel company, what better source than the planet for which uranium was named?

The name is Orano, formerly AREVA. It's derived from the heavenly body Uranus, which originates in the Greek word Ouranos.

"If you take the word uranium and remove the U at the beginning and use O, and the IUM at the end and use O, you get Orano. The two O's represent the nuclear fuel cycle, explains Véronique Loewen, Manager, Communications.

Orano's new logo is printed in rounded lower-case letters and accentuated with a free-form symbol representing ore bodies.

"It's about the nuclear fuel cycle," said Loewen of the symbol. "It can be round, but it doesn't have to be particularly when we consider the impact of innovations. It has to be a cycle, something that is continuous. The odd shape of the logo is intended to show that."

Although the parent company has a new organizational structure and has divested several of its holdings in order to focus on nuclear fuel, from exploration to recycling, nothing will change here at the Canadian mining operations, said Loewen.

"In Canada, only the name has changed," she said. "We are the same company, we have the same projects and operations, the same people, the same commitments to safety, the environment, our communities and working with our northern neighbours.

"For us, it's a branding change. It's an opportunity to reaffirm our commitment to being a sustainable mining company in Saskatchewan."

TAGGING ALONG

JANEY DUROCHER-YEW
RADIATION TECHNICIAN
CAMECO

For Janey Durocher-Yew, life is all about family. The radiation technician at Cameco's Cigar Lake operation wanted a great job, but she also wanted to stay in the North where she grew up. It was also very important to Durocher-Yew to inspire and support her children. We asked her how she made the vital decision to seek training, find employment, and still stay close to home.

Q: How did you become a radiation technician?

A: As my children got older, I decided it was time to get serious about my future and set goals that would teach my children that hard work and education pay off in life. I searched for upcoming programs starting in the fall, and with my determination, I got into both programs I had applied for. Eventually, I decided to take the Radiation and Environmental Monitoring Program offered through Northlands College in LaRonge. With the help of my grandma, who supplied me with a vehicle, I packed up my family and moved two and half hours away from home to make my dream and goal a reality. Leaving my home of Beauval was the hardest thing I've ever had to do.

Q: Why did you decide to go into the mining industry? And why did you chooser this particular job?

A: I learned, at a very young age, that uranium mining was the way many of our Northern people successfully gained local employment that allowed one a comfortable lifestyle. When I was young, local jobs were few and far between, but this has changed a lot. I had a couple of friends that had previously taken the Radiation and Environmental Monitoring Program and were working in Radiation Departments at different Cameco mine sites. At the time, I knew very little about radiation and what a radiation technician actually did, but thought it sounded quite interesting and important.

Q: What do you do every day on the job? What are you responsible for?

A: I work a two and two rotation, which is two weeks at work and two weeks at home. Shifts are 12 hours from 6 a.m. to 6 p.m. with a one hour lunch break. My morning usually starts with collecting UnU (uranium in urine) samples, which are prepared to be sent offsite for analysis. We then set up and issue dust pumps to both surface and underground workers to measure their exposure to long-lived radioactive dust (LLRD).

I perform daily equipment checks before catching the cage underground at 7:30 a.m. to collect our required daily and weekly radon progeny (RnP) samples. We also collect radon gas (RnG) samples. We also scan everything that needs to be brought to surface from underground; this could be anything from tools to bins of garbage.

Our afternoons have many different tasks depending on which day it is. We usually have surface scans for items that need to be sent offsite. We even scan our own equipment when it needs to be sent offsite for yearly calibration.

Other tasks we do include data entry, area swipes, beta/gamma scans, confined space checks, assigning badges and many more tasks. My days are busy but rarely the same.

Our radiation department is responsible for controlling the radiation and safety hazards within the working environment at our site. As a radiation protection technician I am responsible for monitoring radiation levels site-wide to ensure all the workers are in a safe environment.

Q: How long have you been at the mine?

A: I'm currently an intermediate radiation technician at the Cigar Lake Operation. I have been employed here since September 4, 2014. I previously worked at the Rabbit Lake mine for two years when I decided to stay home with my two youngest children until they were old enough to understand the concept of "working away from home."

Q: Tell us about yourself. Where are you from, what do you like to do on your own time?

A: I was raised in Beauval ("Beautiful Valley"), Saskatchewan. It is a small northern community that overlooks the Beaver River. I completed most of my schooling at our local school, up until high school graduation in 1994. I then moved away for a few years but decided later that I wanted to raise my children at home. Since 2006, I've been raising my children in Beauval and moving back home was the best decision I've made. Home is truly where your heart is and it is important to have your family and friends around. Although my life has had many obstacles, I've never given up hope and continue to work hard. My inspiration to continue doing better comes from my children and also teaching them that hard work takes dedication but the rewards are endless.

Q: Is there anything else you'd like to share?

A: Working for Cameco's Cigar Lake Operation has been a great privilege. They are always very supportive of their employees. I am proud to be a part of this team. Being away from your family for two weeks is a sacrifice that I face but, at the same time, working at Cigar Lake is like having a second family. You meet many people and some become life-long friends.

I have amazing co-workers and a very supportive department and will forever be grateful for what I have learned from everyone. Daily, I learn new things and this is what I really enjoy about my job. Each day there are challenges. Whether it is sampling radon progeny inside a tank or learning the stages of the Jet Boring System (JBS), or learning how ore slurry is shipped by our trucks to McClean Lake, I enjoy trouble shooting when issues arise or simply helping a co-worker understand how different dosimetry devices work.

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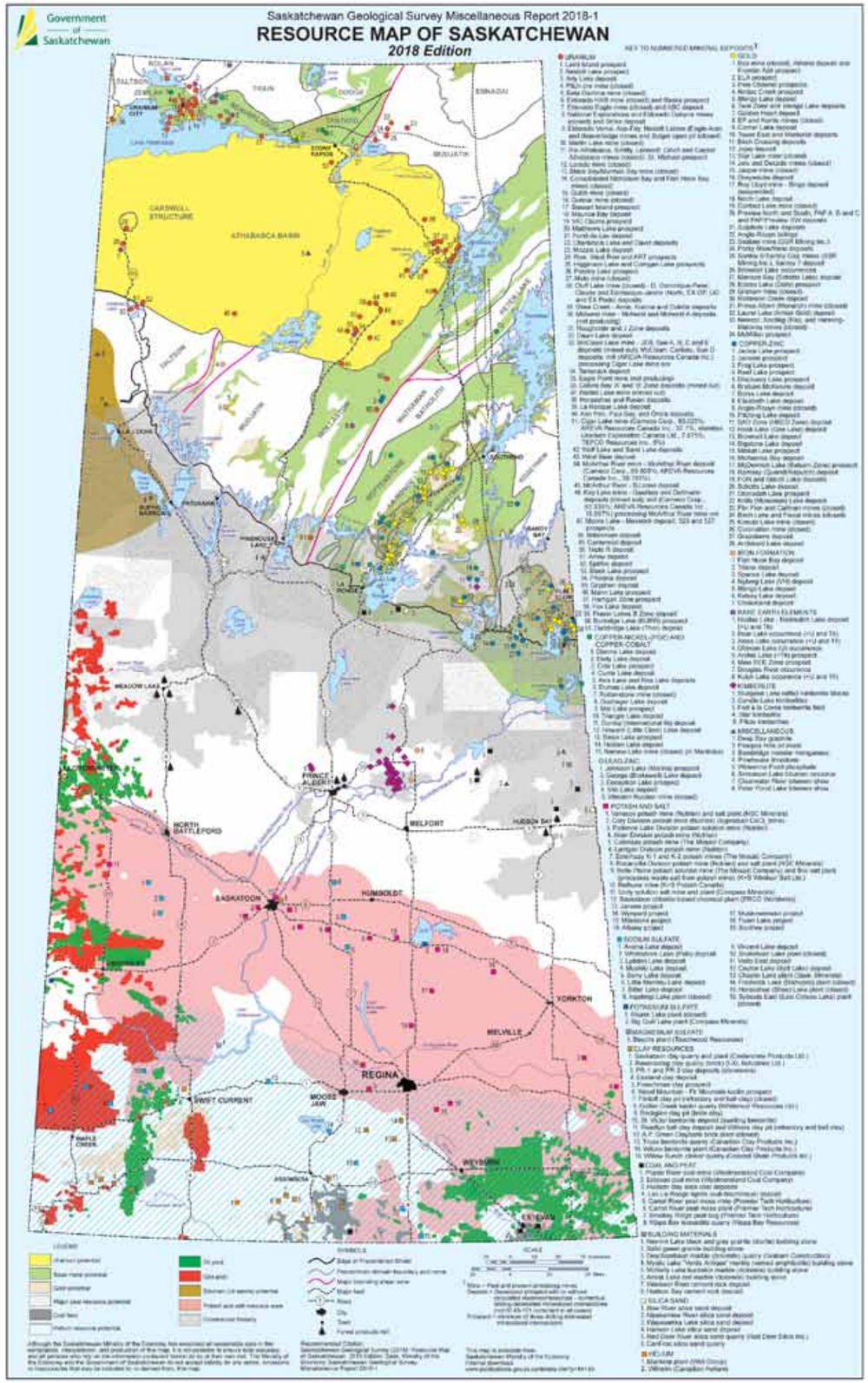

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