

# northern **PROSPECTOR** 2020-2021

The annual mining & exploration review

An official publication of the Manitoba-Saskatchewan Prospectors and Developers Association

**Nickel and copper: Manitoba's comeback team**

**Saskatchewan's exploration and development highlights**

**New rare earth processing facility in  
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# table of Contents

Helicopter Transport Services: From humble beginnings – **6**

Message from the MSPDA president, Stephen Masson – **8**

Nickel and copper: Manitoba's comeback team – **14**

Saskatchewan Exploration and Development Highlights for 2019 – **17**

New rare earth processing facility in Saskatchewan to secure North American supply chain – **28**

The Lithium One Project in Southeast Manitoba – **30**

Rockcliff Metals: Advancing towards a production decision in the largest VMS district in the world – **32**

West Bear Cobalt-Nickel Project update – **34**

Alex MacIntyre Associates Ltd.: The power of people for over 60 years – **35**

Arrowhead Helicopters Ltd.: Providing safe, reliable and efficient helicopter charter service – **36**

Innovative nuclear technology has the potential to transform the mining industry – **39**

Diamonds and gold at Tree River – **40**

Saskoba Lake VMS, gold and silver targets: A partnership – **42**

Core box production workers: Talents revealed during COVID-19 – **44**

Air booster rebuilds, new life for your booster on today's tight budgets – **46**

"Fill the Mill" – **48**

COVID-19 relief for Saskatchewan mining companies – **50**

Northern businesses diversify as mining industry slows – **52**

Training = opportunity – **53**

Putting crisis to work – **54**

Applications open for targeted mineral exploration incentive – **56**

Thermal blankets – Optimal solution to avoid colossal equipment damage costs – **57**

Western Heritage celebrates 30th anniversary – **59**

Recognition of best practices in mineral exploration with ECOLOGO – **60**

Why your business needs cloud backup – **61**

Dumas Contracting Ltd.: Your project, our expertise, common ground – **62**

Temperature detection cameras for employee/visitor temperature screening – **63**

Rethinking gloves: How one company is making a difference – **64**

Voyageur Mineral Explorers Inc. – **66**

Reimagining the historic Rice Lake Gold District – **69**

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## INDEX TO ADVERTISERS

1911 Gold Canada Corporation.....	69	Osprey Wings Ltd.....	22
Aggressive Drilling Ltd.....	19	Porcupine Opportunities Program Inc.....	44
AJG Exploration Ltd.....	23	Prairie Helicopters Inc.....	15
Alex MacIntyre & Associates Ltd.....	45	Proxiv Inc.....	63
Arrowhead Helicopters Ltd/.....	37	Redden Net & Rope Ltd.....	49
Bit Service Company Ltd.....	10	Rockcliff Resources Inc.....	9
Canadian Nuclear Association.....	41	Ross Industries Ltd. / Big Ice Services.....	12
Comairco Equipment Ltd.....	47	Saskatchewan Association of Optometrists.....	25
Dumas Contracting Ltd.....	62	Saskatchewan Ministry of Energy and Resources.....	21
Exploration Tents & Arctic Camp Supplies.....	8, 11, 16	SaskTel.....	IFC
GDE Exploration.....	43	SIMSA.....	6
Heli-Lift International Inc.....	3	Sling-Choker Mfg. (Thunder Bay) Ltd.....	16
Helicopter Transport Services.....	7	University College of the North.....	5
Lewis Instruments Ltd.....	55	Voyageur Mineral Explorers Corp.....	13
M.A.R.S.H. Expediting.....	24	Watson Gloves.....	OBC
Metalex Metal Buildings Inc.....	51	Western Heritage.....	18
Northern Resource Trucking.....	20	Xplor.....	IBC

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## From humble beginnings

By Mike Lavoy



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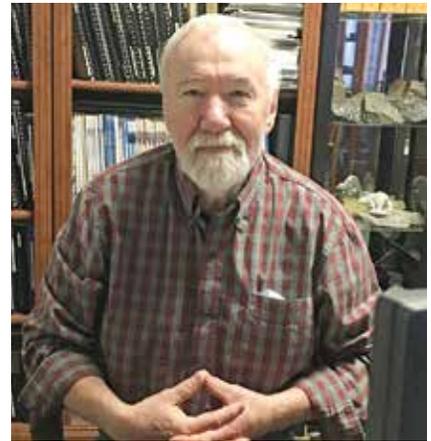
# Message from the MSPDA president

By Stephen Masson, M.Sc., P.Geo., President,  
Manitoba-Saskatchewan Prospectors and Developers Association

It has certainly been a difficult year for our mining and exploration industry and for governments as well, reacting to a myriad of interest groups relating to the COVID-19 pandemic. Industry has been challenged by a loss of services and workers that, because of restrictions, must adhere to government rules on self isolation and restricted travel. It is certainly a tough line to walk given the emotions involved and lack of clear information amongst the misinformation as governments try to control the outbreaks without too drastically hurting commerce. Unfortunately, it has not worked well in either controlling the cases or in not damaging the economy and the social economic fallout on that on families. Perhaps the biggest damage in the way of casualties, was shuffling the elderly in hospital care to overloaded elderly care homes and thus overloading the staff and resulting in preventable deaths.

In Manitoba and Saskatchewan, and generally throughout Canada, we are grateful to see that our mines ministers (by want of another name in some cases)

declared mining and exploration to be an essential business, especially considering its economic importance to the north. With practical restrictions on social distancing and self-isolation, etc., those of us in exploration were able to continue our work, although service help is getting more difficult to obtain with the lockdown of some communities. This was a lifesaver for our industry as many companies and service providers would have not likely survived, especially in Manitoba where we have very few active players. Despite the challenges, many juniors like Rockcliff Minerals and Callinex prevailed and moved forward with discoveries and, in the case of Rockcliff, closer to being a miner as it develops its numerous deposits and discoveries. Voyageur Mineral Explorers Corp. continued in their exploration program last year with an exciting intersection of high-grade zinc and gold at the Tara deposit in Flin Flon and mineralized zones north of Callinex's discovery on their Alberts Lake property. All these companies are developing new targets. The news about Foran Mining



through Glencore, moving ahead with their development plans for the large McIlvenna Cu-Zn deposit at Hanson Lake Saskatchewan looks promising for Flin Flon and Creighton, considering the impending closure of Hudbay's Triple 7 mine next year. Minnova, with high gold prices, has again announced its plans to move forward with putting the Puffy Mine into production, which would be a real boost to the Sherridon area. All these discoveries and exploration plans would not have happened without the industry being exempt and we once again thank Hon. Blaine Pedersen and Hon. Bronwyn Eyre.

The MSPDA would like to praise Manitoba's Minister Petersen's commitment to endorse and follow through on the recommendation of the Manitoba Liaison Committee on Mining and Exploration (MLCME) [<https://northernprospector.ca/october-2020-newsletter/>]. This is a watershed event which grants more security on investment into exploration of the province's vast mineral potential, especially in relation to the introduction of five-year permitting, the issuing of permits through the Mines Branch and others. The MSPDA is very appreciative of the Committee for adopting many of the concerns and recommendations we have put forward to them and thank them for incorporated our contribution as they continue in their efforts to make Manitoba a place that welcomes investment.

Our Association is also pleased to see that the Province of Manitoba, through the Mineral Development Fund, has awarded Callinex \$300,000 from to move their discovery forward as part of their northern development initiative. Cal-



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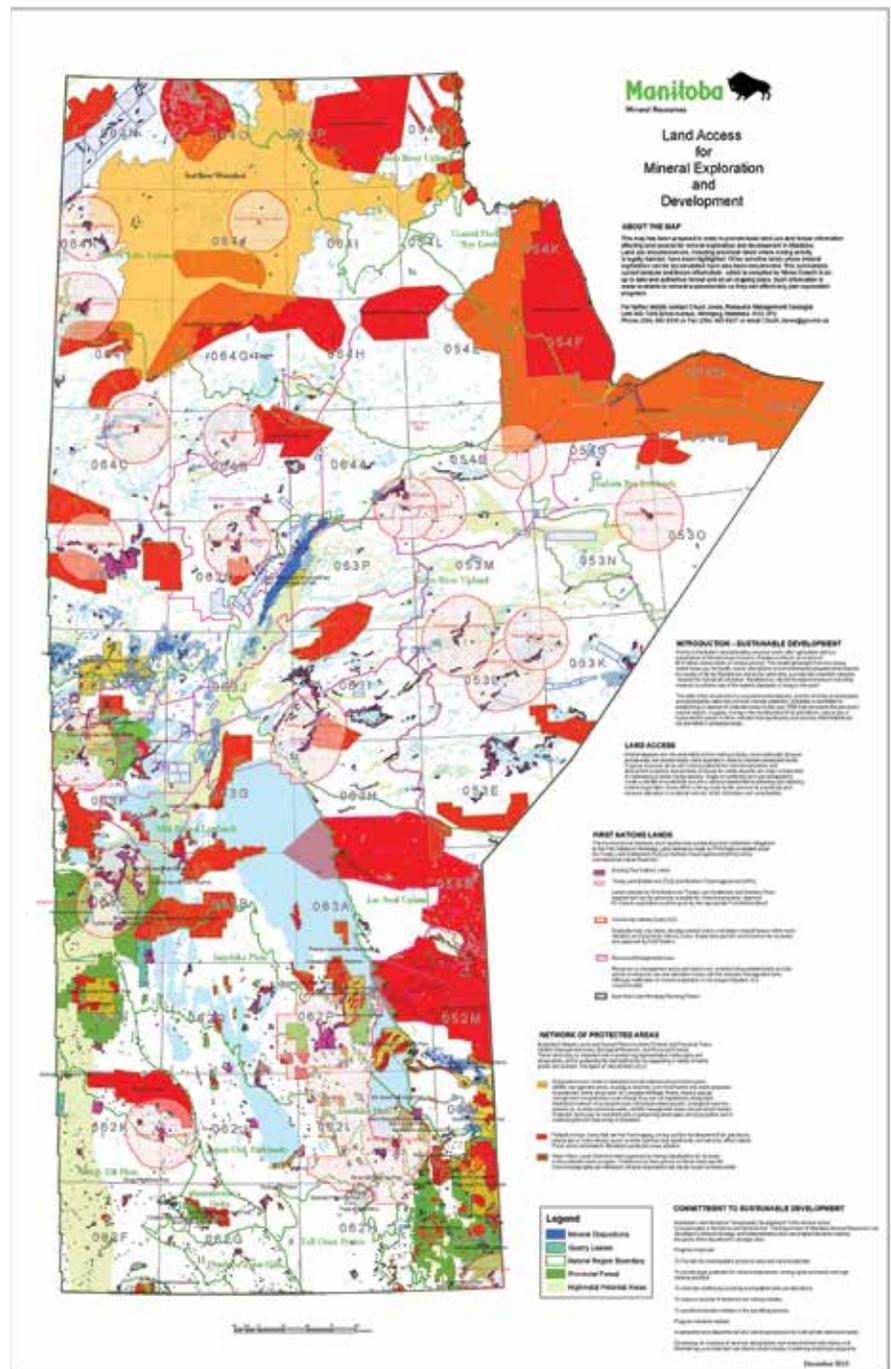
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linex has stated that they will use this money for further drilling. This example is displaying a new effort by Manitoba to be more aggressive in supporting the successful efforts of those promoting and exploring Manitoba's vast mineral potential in the north.

We would also like to thank the Saskatchewan Mineral Exploration and Government Advisory Committee (SMEGAC) for their continued work to keep Saskatchewan's mining and exploration industry strong and progressive in making Saskatchewan Canada's top place in ranking by the Fraser Institute to explore in Canada.

**Treaty Land Entitlements being placed on Mineral Dispositions** – commentary by Stephen Masson, President, MSPDA

**Treaty Land Entitlement (TLE) Issue.** Historically, the province dragged its feet for almost 100 years on granting additional land to First Nation Peoples of Manitoba as was required and part of the condition on it becoming a province. This was certainly justice delayed and that is justice denied. Finally, First Nation peoples are getting the land they were entitled to under the rules that established formation of Manitoba as a province. One of the problems facing Manitoba's investment has been the how TLEs and mining claims are treated in relation to one another. However, what was not supposed to be the case is that treaty land entitlements could be superimposed on private land, mining claims, highways, hydro facilities, etc. For the most part, they were not, except in the case of mineral dispositions (mining claims or leases). This error was not the part of First Nation communities but government administrators who failed to address the overlap and not permit this to occur. Unfortunately, it has occurred and the mining dispositions are in limbo. Permits for exploration cannot be obtained that would enable assessment work to be carried out so the claims can be kept in good standing. This would cause exploration of the disposition resulting in the holder's loss of investment and potential financial opportunity. The TLE on top of the mineral claims also prevents sale of the property to a third party. The lack of action by the govern-



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ment on this issue amounts to expropriation without compensation. Bill Ferreira, a holder of dispositions affected by the TLE that has been placed over them, has asked the Manitoba Liaison Committee on Mining and Exploration (MLCME) to look into this some time ago to address the problem, but they have not made it a priority. The signal it sends to investors outside and inside the province is that of great uncertainty. There is no guarantee that if a company spends money on a property and finds a deposit that it can-

not be taken from them by a TLE being placed over the claims or in some instances access to the property. This type of uncertainty drives away investment from Manitoba, investment that could benefit the shareholders as well as jobs and business opportunities for First Nation and Northern communities. In Saskatchewan, the Crown encourages the parties to reach a settlement and, if that is not done, the exploration company or prospector can continue to be issued a permit and do work. In reality, this is also

problematic. MSPDA suggests the following steps be instituted into the regulations in the sense of fairness to all:

- a) If a TLE has been placed on Mineral disposition, assessment credits are no longer necessary to keep the claims in good standing but are maintained automatically.
- b) Parties should be asked to resolve this and retract the TLE if possible or reach a business arrangement and given a reasonable time to do this that is not too long or insufficient.
- c) If no business arrangement is possible or a retracement with additional land granted elsewhere, then the province has the legal right to expropriate the mineral dispositions providing compensation to the innocent party who acquired them legally by consent of the crown is awarded for lost investment, time and most importantly lost opportunity.

ALL THE ABOVE ARE FAIR TO EVERYONE.

In the future to ensure there is no deterrent to investment in Manitoba, a law passed that no TLE can be placed on mineral disposition (actually already on the books) but this time properly administered and never can a TLE be placed over a new discovery. These are reasonable approaches to attend to the errors made in the past by government officials and to ensure in the future they are not made again.

BOTTOM LINE: MANITOBA NEEDS TO ENCOURAGE INVESTMENT AND NOT DETER IT.

### MSPDA INTRODUCING THE NORTHERN PROSPECTOR'S JOURNAL

This summer, the MSPDA along with DEL Communications decided to launch a monthly newsletter, the Northern Prospector's Journal in addition to our annual magazine. Please refer to our ad on the Journal on page 27.

It was launched out of the need for more communication and education among those in the mining industry, government and First Nations communities, and to promote exploration within Manitoba, Saskatchewan and Nunavut. Our association represents the junior exploration company, project generator and the prospector, as well as contractors and suppliers to the exploration and mining industry.

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The Northern Prospector's Journal is a monthly publication that will cover important topics in the mining industry, including government releases, public company exploration activities and stories of events and people in our industry. Most of all we want to be your voice where you can express concerns on issues affecting our industry, whether that be policies, infrastructure, regulations or whatever activities that have a negative effect of your company's or a prospector's ability to raise capital or carry out your programs, in an environment with relative security of ownership and the spending of funds. We strongly encourage submitting articles that address these concerns. We also will gratefully accept and publish press releases by companies related to their activities in Saskatchewan or Manitoba including links to their websites.

Currently our membership represents the largest group of stakeholders with more than 500,000 ha of dispositions for mineral exploration.

All articles outside government and public company news releases submitted will be subject to review by a committee from our membership to ensure accuracy, legal compliance and to secure permission from copyright infringement. Our efforts here will be professional in approach and respectful but that is not to say that there may be articles that some might view as controversial in addressing unattended ongoing issues.

"The MSPDA has currently a distribution of 700, with another 3,300 by January, for a total of 4,000 new contacts. The concept is, in exchange for this service, MSPDA will provide some advertising space in our newsletter for DEL.

We are seeking new members. Our membership fee is a whopping \$5 for individuals and \$25 for public exploration corporations. It is free to students and First Nation communities. Our aim is to have every geology student to have access to our newsletter. Our hope is reach out to investors, companies and project generators to support their activities in central Canada. Our membership charter states that members must be pro-exploration and development of our mineral industry and not advocates that deter exploration opportunities or against de-

velopment. We offer, free of charge, a place where the Governments of Manitoba, Saskatchewan, Northwestern Ontario, Northern Alberta, and Nunavut can notify, through our newsletter, key policy changes affecting the exploration industry and investors in Central Canada as well as press releases of public companies working in Manitoba or links to them.

We shall also be developing a website for both our monthly newsletter and annual magazine where company news releases and the company's website may be linked to so we all stay interconnected to further enhance and promote our industry and our provinces. We are also looking at new ways to interconnect with other exploration news providers as we have with Keewatin incorporating their newsletter into ours, which is very much appreciated.

We take the stance that any newsletter, magazine or newspaper may use any of our articles provided they give reference to the source (MSPDA Northern Prospector Journal and date), don't take selected portions out of context and also seek their own underlying copy right in-

fringement. This will of course not apply to public companies or government news releases.

There is good news out there and there is great exploration potential and those stories need to be told and highlighted. If we are to improve the exploration climate in Central Canada, we need to provide the information and ideas necessary so we can lobby for good decisions for our industry, our provinces and those that live or invest here. Our politicians have not always had the full benefit of good advice from chosen advisors and we hope we can provide this through convincing dialogue and constructive communication.

We ask for your patience and some forgiveness as creating this newsletter is a work in progress which shall improve over time. Suggestions and ideas to enhance our voice are most welcome.

Remember, this is YOUR VOICE!

Stay safe and happy holidays,

Stephen Masson

P.Geo., MSc President MSPDA ✘

**The last four issues of the Northern Prospector Journal can be found here:**

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# MAJOR CONCERNS IN MANITOBA SEAL RIVER FACETIOUSLY PROPOSED PROTECTED AREA

Commentary by Stephen Masson, President, MSPDA

**M**SPDA was very concerned by the attempt by the federal government to do an end run around Provincial jurisdiction on resources where the federal government promoted and supported a protected area in the region of Seal River Basin without the province's knowledge or public consultation. I cannot believe they were not helped by the parks and resources of Manitoba as it was previously on their wish list. This is a large amount of territory; this sterilizes an area of high mineral potential (the size of Nova Scotia) from exploration and that there has been no consultation process with other stakeholders prior to this agreement, especially given the endorsement by the Federal Government by way of funding. The province was blindsided on this.

The proposed area combined with other parks and proposed restricted areas in the northern part of the province is greater than the Maritimes, excluding Labrador. Combined with the Swan River protected area, this represents 11 per cent of the province. This would remove a vast poorly to underexplored region of high-mineral potential in terrains very favourable for mineral deposits of gold,

silver, diamonds, base metals such as copper-zinc and nickel, as well as rare earth metals, etc. The region has quartz pebble conglomerate with gold of Proterozoic age, where elsewhere in the world of similar age, such as South Africa and Australia, have produced enormous rich deposits. The ancient crust of the Caribou Park area is the oldest in Canada, the very age of rocks that host diamond-bearing kimberlites around the world. What this does is severely sterilize the economic potential of the north for future generations.

Under the federal government's own rules when the Government of Canada proposes the establishment of a park, they undertake a Mineral and Energy Resource Assessment (<https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/mineralsmetals/pdf/mms-smm/poli-poli/pdf/meratxt-eng.pdf>). This process that I have linked should be for any federally endorsed "protected area." This has not happened; there as been no consultation with other stakeholders.

Alisa Ramrattan, Senior Director of Mines, and I spoke about this as MSPDA recommended a process of re-establishing a process similar to the former Mineral Liaison Exploration Committee (MELC), where land access issues and

protected areas were dealt with from a multi-stakeholder approach involving exploration associations, the mining association, forestry groups, the geological survey (feds and province), parks, natural resources biologists and zoologists, even the World Wildlife Federation was at the table. The thing is it worked but was later disbanded when science and economics became a thorn to other political objectives. Alisa said that the government may be open to this and would consider it.

What should happen is that the federal government should pony up 3.2 million to finance a comprehensive look at the geological assessment of this area including airborne surveys. Otherwise the province will be surrendering to the federal initiatives and some non-Canadian environmental groups the future economic prosperity of the north where few will benefit except a few lodge owners. Federal money for assessing this area's mineral potential, if the feds so insist, could greatly support the Manitoba Geological Survey. The MSPDA certainly hope Minister Petersen and the Manitoba Mineral Liaison Committee for Mining resist the expropriation of this vast area of high Mineral Potential from exploration and set up a land use steering committee. ✘

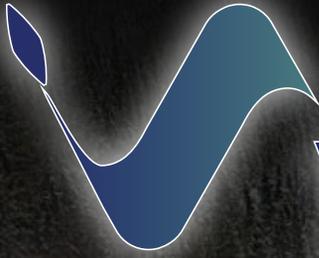


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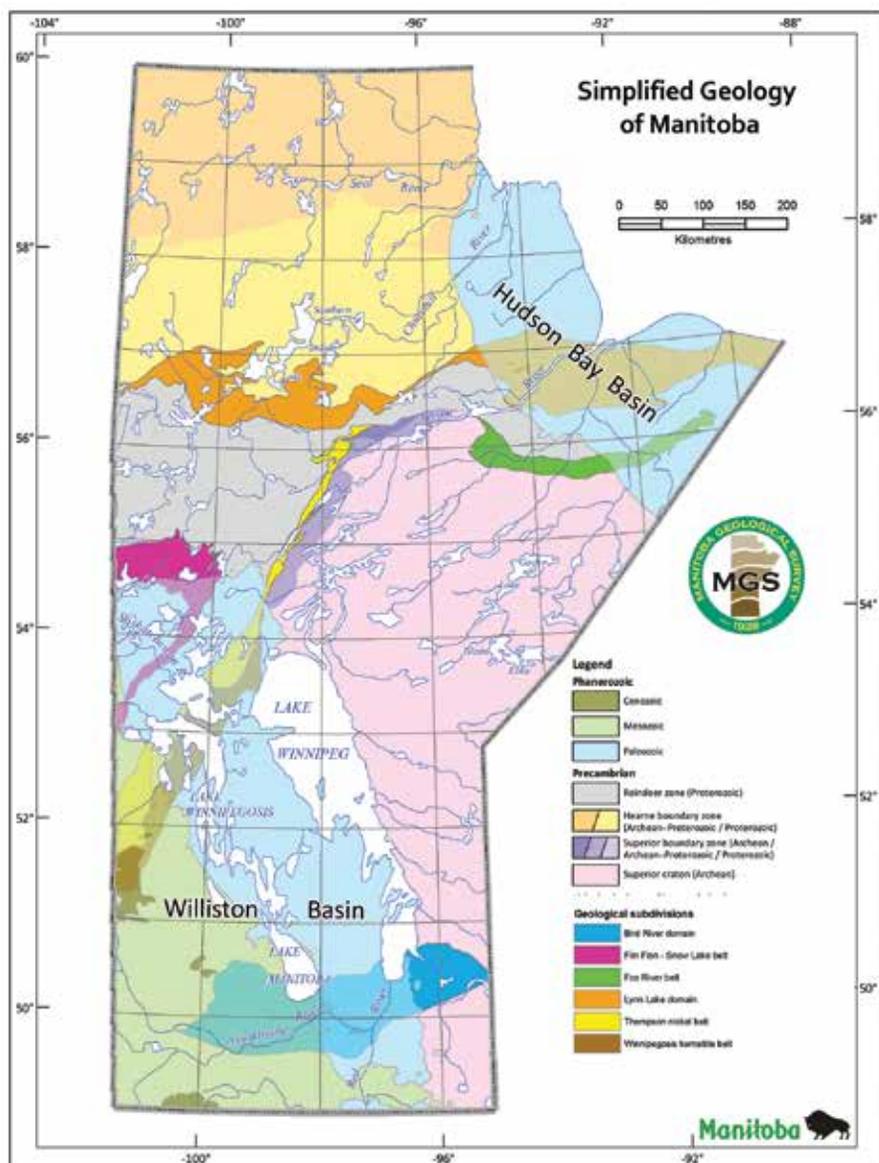
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# Nickel and copper: Manitoba's comeback team

By Susan Michaels

Contributors: Chris Coueslan, Marc Rinne, Manitoba Geological Survey



**O**n the heels of a decade-long worldwide commodities slump, the impact of a 2020 global pandemic put exploration and mining to the test. Challenges aside, two of Manitoba's base metal 'stars' – nickel and copper – may score a win as one of the best comeback stories in recent years. InvestingNews.com reported in early August that some nickel companies performed exceptionally well, rebounding from a low of US\$11,055 per tonne in March to US\$13,888. Elon Musk called for more mining of the base metal, with similar results for copper and a promising 'upside' on pricing for the remainder of the year.

Both nickel and copper are critical components of today's cleaner, greener energy demands for hybrid cars, wind turbines, solar cells, energy-efficient appliances and modern communications devices from cellphones, computers, TVs and tablets.

Nickel and copper have a long and important history in Manitoba. The discovery of nickel sulphides started before 1920 in the Bird River area and culminated with the discovery of the world-class Thompson deposit in northern Manitoba in 1956.

In Manitoba, nickel sulphide deposits are associated with mafic-ultramafic intrusions and ultramafic lava flows (kom-

atiite). Major deposits of this type exist along the Paleoproterozoic rifted margin of the Superior province (defined in Manitoba by the Thompson nickel belt, Fox River belt and Winnipegosis komatiite belt). Other occurrences link to greenstone belts of the Archean Superior province (Bird River and Island Lake belts) and the Paleoproterozoic Trans-Hudson Orogen (Lynn Lake and Flin Flon–Snow Lake belts). Continued exploration successes and favourable, yet underexplored geology, indicate high potential for new nickel discoveries.

Not to be outdone, copper (copper-zinc) production from volcanogenic massive sulphide (VMS) deposits, first discovered at Flin Flon in 1914, attracts ongoing exploration. Manitoba's world-class polymetallic (base and precious-metal) VMS deposits are clustered in several significant mining districts around the margins of the Kiseynew domain in the Trans-Hudson Orogen, providing considerable scope for both regional and district-scale exploration.

#### **HITTING THE GRADE – ROCKCLIFF, CORAZON, WOLF DEN, CANALASKA, FJORDLAND**

Tracking exploration activities in Manitoba, several companies continue to make inroads. In early 2020, successful assays by Rockcliff Metals at several properties in the Flin Flon and Snow Lake greenstone belt area showed potential. Home to deposits of copper, zinc, gold and silver, the renowned Paleoproterozoic VMS district has attracted Rockcliff's efforts through an extensive portfolio of properties including eight of the highest-grade, undeveloped VMS deposits and five lode-gold properties held by Goldpath Resources Corp., a wholly owned subsidiary of Rockcliff.

"We continue to work hard to find economic mining and processing methods to turn the success of our exploration efforts into a viable construction decision for the Board to review in 2021," says Alistair Ross, CEO, president and director. The company is continuing ex-

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ploration on advanced stage properties as well as emerging projects and blue-sky opportunities in the southern Snow Lake mining camp, and anticipates over 70,000 metres of exploration drilling to due for completion by the end of 2020.

Corazon Mining Limited, a battery and base metals explorer-developer based in Australia, has a strong commitment to exploration in the Lynn Lake belt, one of Canada's prime nickel producing regions. With improved nickel prices, Corazon anticipates significant

re-development potential in their Lynn Lake Ni-Cu-Co Mining Centre. Corazon's efforts also led to the discovery of a large magmatic sulphide system (Fraser Lake Complex), an intrusive mafic body situated just south of the Lynn Lake Mining Centre with potential to host significant Ni-Cu sulphide deposits.

Another active company in the Snow Lake-Flin Flon greenstone belt, Wolfden Resources Corporation, remains focused on advancing its 100-per cent interest in the Rice Island Ni-Cu-Co deposit.

Comprising 2,611 hectares, including the flagship Rice Island deposit, the project is at the southwest end of Rice Island, five kilometres from Hudbay's Snow Lake concentrator and associated mining infrastructure. Following recent drilling results, the company confirmed the grade and nature of Ni-Cu-Co mineralization of the Main Zone. Wolfden was also successful in the discovery of an underlying feeder zone (New Lower Zone) containing high-grade nickel sulphide mineralization. Future exploration efforts are aiming at additional drilling of the mineralizing system to enlarge the known deposit and find additional deposits.

In the Thompson Nickel Belt, CanAlaska Uranium Ltd.'s three properties (Strong, Hunter and North Manibridge) are drawing attention. Nickel deposits at the 4,368-hectare Manibridge Project occur within sulphide-rich metasedimentary rocks of the Ospwagan Group intruded by ultramafic sills. In March 2019, CanAlaska reported upgraded assay results and lengths at Manibridge with high-grade nickel up to 12.06 per cent over 0.95 metres, contained within semi-massive and disseminated sulphide mineralization.

Fjordland Exploration's Thompson Nickel Belt project also continues to attract attention as earlier this year the company. CanAlaska Uranium granted an option for the project to earn an interest in two large claim groups (Hunter and Strong), located 25 kilometres north of Vale's Thompson mining complex. The properties are prospects for Ni-Cu-Co-PGE magmatic sulphide mineralization, analogous to the deposits hosting the historic mine. A review of data by Fjordland confirmed the presence of several robust near-surface drill targets and demonstrated 14 potential Ni-Cu-PGE exploration targets, six of which will be an ongoing priority.

These companies show glowing prospects for nickel and copper for Manitoba to come back after a decade-long worldwide commodities slump and impact of the global pandemic.

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# Saskatchewan Exploration and Development Highlights for 2019

Produced by the Saskatchewan Geological Survey, Ministry of Energy and Resources

In 2019, Saskatchewan retained its standing as the most attractive jurisdiction in Canada for mining investment, according to the Fraser Institute's *Annual Survey of Mining Companies: 2019*. The survey's Investment

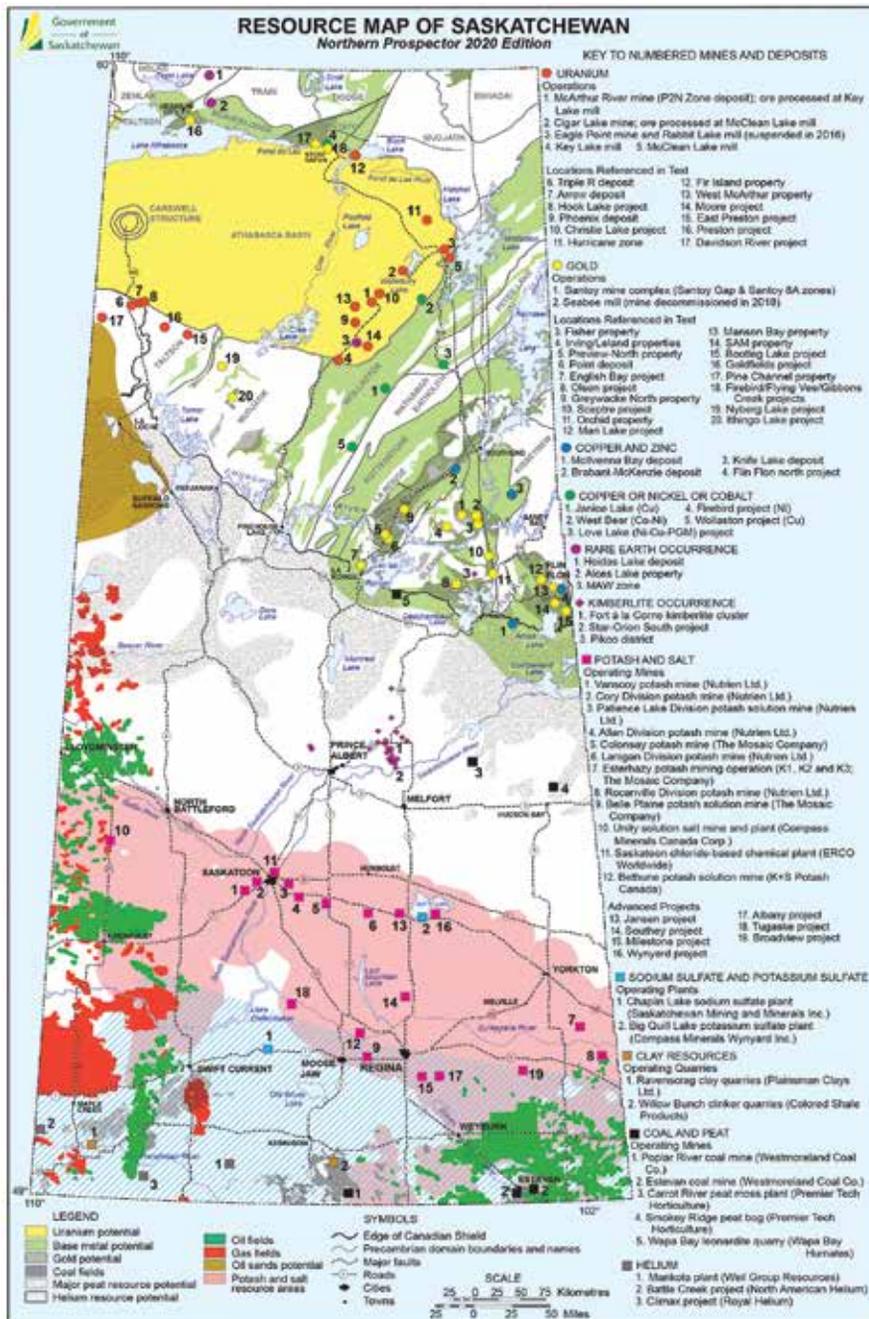
Attractiveness Index ranks jurisdictions on a combination of their geologic potential and mining policy attractiveness. In a similar vote of confidence, *The Mining Journal's* annual *World Risk Report* assessed the top 99 jurisdictions around

the world for security of investment in mining projects and Saskatchewan was ranked second overall and one of only three jurisdictions globally to achieve a triple-A rating.

Saskatchewan's aggregate value of mineral sales for 2019 was about \$7.9 billion (B), up from \$7.0B in 2018, \$6.7B in 2017 and \$6.4B in 2016. Saskatchewan is home to two of the most desirable minerals in the world – potash and uranium. The province has the largest potash industry in the world, accounting for about one-third of annual global production and hosting nearly half of the world's known reserves. The world's largest high-grade uranium deposits are located in northern Saskatchewan, which accounted for more than 13 per cent of the world's primary uranium production in 2019.

Similar to most jurisdictions, Saskatchewan's mineral exploration activity levels were adversely impacted by the COVID-19 pandemic. A survey conducted by the Ministry of Energy and Resources, prior to the pandemic, indicated that approximately \$242 million (M) was to be spent on exploration activity in the province in 2020, targeting a variety of commodities. Although some companies were able to continue with their planned exploration projects, others were unable to mount programs due to lack of financing or other difficulties related to COVID-19 restrictions. Exploration expenditures in Saskatchewan have been consistently buoyed by uranium and potash projects over the past decade; however, in more recent years, spending has begun to shift more toward diamonds and gold, as well as and base metals projects. There are also emerging interests in critical minerals<sup>1</sup> and other rare and specialty metals.

In response to the COVID-19 pan-



"Critical minerals are natural resources essential to the economic and national security of nations, and have the potential to become scarce because of geological, political, or technical factors. They are mineral commodities that have important uses and few effective substitutes."

demarc, the Government of Saskatchewan is taking steps to provide relief to impacted explorers in the form of regulatory amendments that relax mineral tenure requirements, including waiving expenditure requirements for the current term and subsequent 12 months for mineral claims and leases that were active on March 18, 2020 (the date the State of Emergency was declared); allowing expenditures incurred during the period for which relief is granted to be applied toward expenditure requirements of The Mineral Tenure Registry Regulations; and allowing the holder to meet requirements for refund of deficiency deposits after the relief period has ended.

In addition to these measures, the Saskatchewan Ministry of Energy and Resources is maintaining the Mineral Development Strategy (MDS), intended to support diversification of the province's mineral sector by helping realize Saskatchewan's significant potential for base metals, precious metals and

diamonds. The four-year-long Strategy is entering its third year and consists of three main initiatives: (1) airborne geophysical surveys in under-explored areas; (2) focused geoscience investigations; and (3) a Targeted Mineral Exploration Incentive (TMEI), which offers a rebate of up to \$50,000 on direct drilling costs for eligible projects.

### URANIUM

Saskatchewan produced approximately 13 per cent of the world's primary uranium supply in 2019, which totalled 18 million pounds (M lb) U3O8. All production came from the **Cigar Lake** (operator Cameco Corporation (Cameco)) – **McClellan Lake** (operator Orano Canada Inc. (Orano)) operation. Total production for 2020 was originally forecasted to be 18 M lb U3O8, with all uranium concentrate coming from Cigar Lake – McClellan Lake; however, operations were suspended in March 2020 due to the COVID-19 pandemic. A restart of the Cigar Lake and McClellan

Lake operations was slated to begin in September, with Cameco providing a revised production forecast of 10.5 M lb U3O8 for 2020. The **McArthur River – Key Lake** (operator Cameco) and **Eagle Point – Rabbit Lake** (operator Cameco) operations will remain in a state of care and maintenance, awaiting an improvement in market conditions.

Uranium exploration was robust in the province, with actual expenditures of \$153M in 2019. Estimates for anticipated spending in 2020 were over \$83M; however, these estimates were captured prior to the COVID-19 pandemic and therefore are unlikely to reflect actual spending. Major exploration programs have continued in both the east and southwest Athabasca Basin regions. In the southwest, activity is mainly focused in the **Patterson Lake exploration corridor**, where Resource estimates suggest there is approximately 490 M lb U3O8 contained in the **Arrow** and **Triple R** deposits. Triple R deposit owners, Fission Uranium Corp. (Fission),



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completed a Prefeasibility Study for an underground-only development model, which revealed a 21 per cent reduction in capital costs, estimated at \$1.18B. Fission had previously assessed a hybrid underground and open pit model with a projected capital cost of \$1.50B. Nex-Gen Energy Ltd. continued infill drilling at the Arrow deposit, which will assist with completion of the Feasibility Study that is currently underway. Other uranium exploration drill programs taking place in, and adjacent to, the western Athabasca Basin include the **East Preston** (Azincourt Energy Corp., Skyharbour Resources Ltd. (Skyharbour) and Dixie Gold Inc. (Dixie)) and Preston (Skyharbour, Dixie and Orano) projects; the **Hook Lake** property (Purepoint Uranium Group Inc.); and the **Davidson River** project (Standard Uranium Corp.).

In the eastern Athabasca Basin exploration corridor, Denison Mines Corp. and joint venture (JV) partner JCU (Canada) Exploration Company Lim-

ited (JCU) are working on improving confidence in the ISR (In-Situ Recovery) mining method planned for the extraction of the high-grade **Phoenix** deposit, on the **Wheeler River** property. The technique, which is typically utilized to recover uranium from low-grade sandstone deposits such as those in Kazakhstan, has, up until now, never been attempted in the Athabasca Basin region. Results of initial testing of the approach have been positive, with hydraulic conductivity recorded between injection/pump wells and observation wells in several test areas in the ore zone. Installation of commercial-scale wells and metallurgical testing has been completed with "Proof of Concept" of the ISR mining method being applied by an independent consultant. About 50 kilometres to the northeast, UEX Corp. and JV partner JCU intersected new mineralization on the **Christie Lake** project, which is already host to three other small uranium deposits. Approximately 60 kilometres north-northeast of the

Cigar Lake mine, IsoEnergy Ltd. continues to advance the **Hurricane zone** on the **Larocque East** property. The best intersection includes several metres of massive- to semi-massive pitchblende with grades of up to 30.9 per cent U3O8 and 7.1 per cent Ni at depths of just over 300 metres. Other uranium exploration drill programs taking place in, and adjacent to, the eastern and northern Athabasca Basin include the **Fir Island** property (Orano/Forum Energy Metals Corp.); the **West McArthur** property (CanAlaska Uranium Ltd./Cameco), which also contains anomalous amounts of copper, lead and zinc; and the **Moore Uranium** project (Skyharbour).

## POTASH

Production at Saskatchewan's potash mines has been largely unaffected by the COVID-19 pandemic. In 2019, Saskatchewan's three potash producers, Nutrien Ltd., The Mosaic Company (Mosaic), and K+S Potash Canada GP, had a collective output of over 20 mil-

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lion tonnes (Mt) KCl, with aggregate industry sales of approximately \$6.3B. Canpotex Ltd., the company responsible for most of the province's non-domestic potash sales, reported that strong demand from key offshore markets means that the company is fully committed on volumes for potash sales through the end of 2020.

In late January, Mosaic announced it would suspend operations at its **Colonsay** potash mine indefinitely. The company cited weak product demand and an excess of inventory, combined with accelerated development at lower-cost operations like Mosaic's Esterhazy **K3** mine as the main reasons for the decision.

In July, Mosaic reported that the company's potash division was able to lower quarterly production costs to \$65 per tonne, the lowest in over a decade. The savings were attributed to lower brine management costs, associated with the accelerated development of the new K3 shaft and the decreased reliance on flooding-prone K1 and K2 workings. After 58 years of operation, and 285 Mt of potash production, the K1 mine is scheduled to be ramped down this fall and replaced by production from the new K3 shaft. Similarly, the K2 mine, which has battled water incursions since 1985, will be ramped down by 2022. The transition to the K3 facility will increase the annual name-plate capacity of the Esterhazy operation to 7.35 Mt.

Expenditures for potash exploration and development projects in the province have been in steady decline over the past number of years, as most companies have advanced past the more costly exploration phases and into evaluation stages. In 2019, approximately \$20M was spent on potash projects in Saskatchewan, and a pre-COVID-19 survey indicated that an additional \$19M would be spent in 2020. Languishing commodity prices have led a number of prospective potash miners to scale-back operation plans or to defer development decisions until market conditions improve.

BHP Billiton (BHP) CEO Mike Henry recently stated that a final decision to proceed with developing the **Jansen** potash project will be postponed until the middle of 2021 due to delays caused by the COVID-19 pandemic. Mr. Henry noted that the company has progressed the shafts at Jansen, as it continues to de-risk the project. Upon shaft completion, BHP estimates that the company will have spent around US\$3.7B on the site. If BHP's board green-lights the development, an initial stage would produce approximately four Mt KCl annually. It's estimated that the mine would contribute 350 full-time jobs on site, with another 100 to 150 at the operational control centre in Saskatoon. Mr. Henry also noted that a planned second-stage development could increase capacity to eight Mt annually and roughly double the number of jobs.

Early in 2020, Western Potash Corp. (Western) released an updated Resource Estimate for the first phase of its **Milestone** selective potash solution mining program, southeast of Regina. In addition to evaluating the in-ground resources, the report detailed engineering design studies and projected an estimated capital expenditure of \$128.7M for Phase I of the project. In late April, Western announced the company had successfully started "hot mining" operations at the Milestone pilot project, which the company believes demonstrates the viability of the horizontal selective solution mining approach. The company hopes to recover 4,000 tonnes of KCl per cavern, monthly, with initial product recovery expected by the end of 2020.

Gensource Potash Corp. (Gensource) provided an update on the company's **Tugaske** (formerly **Vanguard**) potash solution mining project, located approximately 150 kilometres northwest of Regina. Gensource has proposed a small-scale, environmentally friendly, selective solution mining operation, similar to what Western is attempting, which the company maintains would require no brine ponds or surficial tailings. Gensource has set an initial target production of 250,000 tonnes per year. The company wants to be small and efficient, as well as vertically integrated, and has established off-take agreements and partnerships to that end.



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Karnalyte Resources Inc. (Karnalyte), in conjunction with their largest investor Gujarat State Fertilizers and Chemicals Limited, completed a Prefeasibility Study for the company's proposed **Proteos Nitrogen** project. The report examined a number of factors, including potential site locations, production technology options and raw material requirements, and conclusions reached indicate an "internal rate of return and equity rate of return that approaches Company benchmarks". Karnalyte hopes to produce nitrogen fertilizer components in Saskatchewan in combination with eventual production from its **Wynyard** potash solution project. Karnalyte continues to maintain and prepare its Wynyard potash project for such a time as market conditions improve and the project becomes more economically viable.

In the spring of 2020, Canada Gold-en Fortune Potash Corp. (CGFPC) announced they had received a posi-

tive decision on their provincial Environmental Impact Assessment for the **Broadview** potash project. CGFPC will now focus on sourcing funding for the proposed one million tonnes per year solution mining project.

Other aspiring potash solution miners, including CanPacific Potash Inc. (**Albany** project) and Yancoal Canada Resources Co. Ltd. (**Southey** project) are continuing to advance their projects.

## DIAMONDS

In 2019, actual expenditures for diamond exploration projects were approximately \$69.3M. Spending in 2020 was anticipated to be \$105.2M, primarily focused on the Fort à la Corne kimberlites at the **Star-Orion South** diamond project about 65 kilometres east of Prince Albert.

In October, 2019, Star Diamond Corp. (Star Diamond) announced that their joint venture partner Rio Tinto Exploration Canada Inc. (RTEC) had completed all ten bulk sample trenches on the **Star**

**Kimberlite** to finish their sampling program on the Star-Orion South project. RTEC's innovative bulk sampling program utilized a custom-fabricated Bauer BC 50 trench cutter rig, designed specifically to recover a one cubic metre bulk sample of kimberlite while minimizing diamond breakage. The massive rig cuts a 1.5 metre x 3.2 metre trench down to a maximum depth of 250 metres, recovering up to 10 tonnes of kimberlite for each metre drilled. Over the 2019 bulk sampling program, a total of 1,215.5 metres of kimberlite was intersected and 6848 bulk samples were collected.

At the end of 2019, Star Diamond announced that RTEC would exercise all four options under the Option to Joint Venture Agreement entered into in June 2017 to continue work on the Star-Orion South property. Under the agreement, RTEC will spend an additional \$52M to complete an additional 20 bulk sample trenches and a Prefeasibility Study to earn 60 per cent interest in the project.

## Targeted Mineral Exploration Incentive (TMEI)



The incentive encourages and supports ground-based exploration for base metals, precious metals and diamonds, within a targeted area of Saskatchewan, where there is significant potential for these mineral commodities.

The TMEI provides a rebate of up to 25 per cent of direct drilling costs, on a prorated basis, up to an annual maximum of \$50,000 per company.

Learn more about this incentive and how to apply at: [saskatchewan.ca/mineral-exploration-incentive](https://saskatchewan.ca/mineral-exploration-incentive) The deadline for TMEI applications for 2020-21 is December 31, 2020. Applications can be submitted to the Government of Saskatchewan.

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In May 2020, Star Diamond announced results from RTEC's brown-fields exploration drillhole 120FB001 that targeted kimberlite K120, which forms part of the Orion North kimberlite cluster. A total of 323 diamonds were recovered from the core, including two macrodiamonds, with the largest weighing 0.552 carats. Also in the spring of 2020, Star Diamond announced that RTEC had commenced processing bulk samples for heavy mineral concentrates at their custom-fabricated on-site plant, prior to the samples being sent to the Saskatchewan Research Council for final diamond recovery.

At the time of writing, Star Diamond announced initial results of diamond recovery from two bulk sample trenches, 19FALCT004 and 19FALCT001. A total of 2,517 diamonds weighing a cumulative 120.1 carats and 2,409 diamonds weighing a cumulative 123.27 carats have been recovered. The largest diamonds recovered from the trenches were 3.27, 3.03 and 2.98 carats. All were recovered from the Early Joli Fou Kimberlite, the dominant kimberlite unit on the property in terms of ore volume and diamond grade. Overall grades for the Early Joli Fou Kimberlite in trench 19FALCT004 were 9.81 to 21.22 carats per hundred tonnes, and in trench

19FALCT001 they were 4.88 to 23.34 carats per hundred tonnes. The average diamond grade and overall weighted average grade from the two trenches are similar to historical diamond grade results from the underground bulk sampling and large-diameter-drilling completed on the Star Kimberlite between 2004 and 2009. It is expected that all, or nearly all, of the bulk samples collected from the 2019 sampling program will be processed by RTEC in 2020.

### GOLD

The **Seabee** gold operation, owned by SSR Mining Inc. (SSRM), remained Saskatchewan's sole gold producer in the past year. The Seabee operation comprises commercial production at the active **Santoy underground mine** and ore processing at the **Seabee mill facility**. The operation achieved yet another year of record production, with a total of 112,137 ounces of gold, a 17 per cent increase compared to 2018; this marks six consecutive years of record production from the operation. During 2019, 344,040 tonnes (t) of ore was milled, with an average mill feed grade of 9.59 grams per tonne (g/t) gold. At year-end 2019, SSRM reported Mineral Reserves of 500,000 ounces of gold at a grade of 10.17 g/t Au. For 2020, SSRM had antici-

ated a strong performance as a result of access to higher-grade ore and increased mining rates. However, the Seabee gold operation produced 29,521 ounces of gold in the first quarter of 2020, but was voluntarily suspended and placed on temporary care and maintenance by late March, due to the COVID-19 pandemic. SSRM implemented a phased restart at the Seabee operation, beginning with initial underground development in June and progressing to full milling and mine production by August, 2020 with new COVID-19 protocols in place. In May 2020, SSRM and Alacer Gold Corp. (based in Denver, Colorado) announced a merger-of-equals to create a diversified intermediate-sized gold producer.

Total gold exploration expenditures for 2019 was \$13.85M, which is slightly lower than that of 2018 (\$14.12M). The price of gold recovered quickly after the initial stock market crash in response to the COVID-19 pandemic and has remained steadily high. Consequently, Saskatchewan saw increased activity from many junior exploration companies that were conducting fieldwork, acquiring property tenure, and raising funds for gold exploration in the province. The following sections outline exploration activities across the province, grouped by area.

#### Seabee Area

In the 2019-2020 exploration period (June 1, 2019 to April 30, 2020), SSRM focused on the **Santoy 8A**, **Santoy Gap**, and **Gap Hanging Wall** (Gap HW) areas at the Seabee operation, to increase and upgrade Mineral Resources. In total, SSRM completed a combined 68,158 metres of surface and underground drilling. In the last quarter of 2019, SSRM completed 12,728 metres of underground drilling, largely targeted at the Gap HW area. At year-end 2019, Mineral Reserves at the Seabee operation decreased by 18 per cent due to mining depletion, while Measured and Indicated Mineral Resources increased by 23 per cent. The increase in Mineral Resources is the result of exploration focus at the Gap HW, which remains open



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along strike at depth and is now considered a significant discovery for the operation. In the first quarter of 2020, SSRM completed 11,400 metres of underground drilling and 4,830 metres of surface drilling on near-mine targets. Highlights include a high-grade intercept 220 metres down-plunge from the nearest Inferred Mineral Resources at the Gap HW, implying mineralization may extend to these depths. District-scale greenfields exploration included 13 drillholes totalling 3,457 metres, with resource-grade intercepts at the **Batman Lake** area, and the **Riddler** and **Joker** targets. The latter returned 117.20 g/t Au over 1.0 metre from quartz veins with visible gold. Fortunately, the majority of SSRM's exploration activities were completed prior to the temporary suspension of operations in late March.

Exploration highlights at the **Fisher** property, which is adjacent to the Seabee mine and owned by Taiga Gold Corp. (Taiga Gold) but under option to SSRM, include 9,463 metres of drilling completed in 31 drillholes; 5,523 soil geochemical samples; and 963 rock samples. Exploration activities focused on the **Mac North, Yin, Abel Lake**, and **Aurora** targets. Multiple high-grade intercepts were identified at the Mac North (e.g., four holes encountered visible gold) and the Yin targets. SSRM is planning for an additional 3,000 metres of drilling on the Mac North target, which was to commence mid-September 2020.

To the southwest is Taiga Gold's **Leland** property, which is under option to SKRR Exploration Inc. In 2019, Taiga Gold completed a three-phase exploration program and an 86 line-kilometre airborne drone geophysical survey on the **Simon-Irving trend**. The latter area included several newly identified mineralized occurrences. SKRR Exploration has also acquired the neighbouring **Irving** property, and Taiga Gold staked additional claims adjacent to its Leland property holdings. Taiga Gold also expanded its existing property holdings and acquired historical "high-grade"

gold occurrences at the **Orchid** project, which is situated 70 kilometres south of, and along structural trend from, the Santoy deposit.

ALX Resources Corp. acquired by staking the **Sceptre** gold project, which is located 32 kilometres south of the Seabee operation and includes four gold showings.

Eagle Plains Resources Ltd. (Eagle Plains) conducted a Phase I exploration program on their **Olson** property (under option to SKRR) near Brownell Lake. This included a 13-day field program focused on the **Jena-Juba, Point** and **Ackbar** areas, and included an 8.6 line-kilometre geophysical survey to define targets for a fall 2020 diamond-drilling program. Sampling and prospecting during Phase I identified several paired geochemical-geophysical trends at lithological contacts, which overall indicate a strong structural control on gold mineralization.

#### *La Ronge Gold Belt Area*

In the past year, MAS Gold Corp. (MAS Gold) has been fairly active on its **Preview-North Lake** gold property, which as of January 2020 is no longer a joint venture with Golden Band Resources. In the fall of 2019, MAS Gold completed a field program that included surface channel sampling, which pro-

vided good confirmation to historical results from 1988. Following the exploration work in 2019, MAS Gold released an Inferred Mineral Resource estimate of 14.11 Mt grading 0.92 g/t Au at a cut-off grade of 0.45 g/t Au. In the past year, MAS Gold has also conducted a series of preliminary metallurgical tests on mineralized drillcore samples from the **North Lake** and **Point** deposits to assess options suitable for high-recovery processing of mineralized material. The results show 89 to 94 per cent gold recovery by flotation and 97 to 99 per cent recovery by cyanidation for the North Lake material. These results were closely matched by material from the Point deposit. MAS Gold also acquired the **Preview Lake** claims from Eagle Plains.

In late August 2020, MAS Gold announced a 2020-2021 exploration program on their La Ronge gold belt properties, where 5,500 metres of drilling to increase resource estimates at the **Greywacke North** and North Lake deposits is planned. An additional 3,800 metres of drilling is planned for other targets on the Greywacke property and on the Preview-North Lake property. The company announced in July 2020 that they will be acquired by Vancouver-based Southern Empire Resources Corp.

In July 2020, Searchlight Resources

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Inc. completed the first phase of exploration on the **English Bay** gold project, located just north of the community of La Ronge. The program included inspecting historical drillcore, analyzing historical assay pulps and rejects, and a 167 line-kilometre drone magnetic survey.

### *Flin Flon–Creighton Area*

Several companies were active in staking and acquiring mineral claims in the area west and south of Flin Flon. SKRR Exploration purchased the **Manson Bay South** gold property from Eagle Plains. Taiga Gold acquired a block of claims surrounding **Mari Lake** that is prospective for gold mineralization and includes the **Naza** and **Aga** showings. Searchlight Resources staked gold and volcanogenic massive sulfide targets along the **An-nabel Lake** and **West Arm** shear zones west of Flin Flon and in the **Bootleg Lake** area. West of Flin Flon, Taiga Gold conducted fieldwork on the **SAM** project, with a focus on gold targets based on geological compilation and results from their 2018 field program.

### *North-central Saskatchewan*

Elsewhere in the province, SKRR Exploration acquired the **Ithingo Lake** property, located about 125 kilometres northeast of Buffalo Narrows, in the largely unexplored Mudjatik Domain.

Eagle Plains acquired mineral tenure north of Buffalo Narrows that includes the **Nyberg Lake** iron deposit, where the company intends to prospect for iron formation–hosted gold mineralization.

### *Far North*

In the Stony Rapids area, Eagle Plains commenced a fieldwork program at the historical **Pine Channel** gold project in June 2020, which consisted of prospecting, geochemical soil sampling, and a high-resolution drone geophysical survey. ALX Resources has indicated interest in targeting possible iron formation–style gold prospects at their **Firebird Nickel** (formerly “Falcon Nickel Project”), **Flying Vee**, and **Gibbons Creek** projects, all located west of Stony Rapids. Analytical results from grab samples returned anomalous gold concentrations from the **Day Lake** showing (up to 8.34 g/t Au) and the **Star Gold** showing (up to 3.58 g/t Au).

In late July 2020, Fortune Bay Corp. (Fortune Bay) announced plans to advance the **Goldfields** project, which includes the **Box** and **Athona** deposits located south of Uranium City. Fortune Bay intends to conduct geological and resource modelling and fieldwork to aid in future resource expansion and exploration drill planning at these deposits. The company plans to complete an updated NI 43-101 Resource Estimate and a Prefeasibility Study for early 2021.

## BASE METALS

In Saskatchewan, expenditures focused on base metal exploration in 2019 were \$6.81M, which was higher than expected but still lower than the \$15.01M spent in 2018. Anticipated expenditures for 2020 were estimated to be \$15.48M, however many exploration programs were disrupted due to COVID-19.

Murchison Minerals Ltd. (Murchison) has continued to explore and expand its 100 per cent owned **Brabant Lake Zn-Ag-Au-Cu VMS** project. In the fall of 2019, the company discovered two new zones of massive sulfide mineralization: copper mineralization 700 metres west

of the high-grade Cu-Zn-Ag **Main Lake** showing; and zinc mineralization 300 metres south along strike from the **Brabant-McKenzie VMS** deposit, named the **Brabant-McKenzie South** showing. Murchison also confirmed zinc, silver and gold mineralization at the historical **MIN** showing, and identified 12 priority drill targets at Brabant Lake based on VTEM Max geophysical surveys and field prospecting from the previous year. Drilling commenced in January 2020 with a 14-hole drill program. In March, Murchison commissioned another helicopter-borne VTEM Max survey and identified 35 new electromagnetic (EM) conductors southwest of the Brabant-McKenzie deposit.

In the spring of 2020, Foran Mining Corporation announced positive results from their Prefeasibility Study for the **McIlvenna Bay** project, and filed a NI 43-101 technical report for the property.

Rio Tinto Exploration Canada Inc. (RTEC) continues exploration at the **Janice Lake Sedimentary Cu-Ag** project. They intersected 0.71 per cent Cu and 4.2 g/t Ag over 18 metres in their first two drillholes in the fall of 2019, and continued to report positive assay results throughout the drill program. In February, RTEC acquired the necessary permits and began construction of a winter road and work camp. By March the road was 50 per cent complete and the company was ready to mobilize an 80-person camp with three drill rigs and a rotary air blast (RAB) drill, but operations had to be put on hold in April due to COVID-19. Despite the disruption, RTEC completed their first-year obligations to option the project from Forum Energy Metals Corp. and Transition Metals Corp. In July RTEC was able to resume construction of a 50-person camp and commence their field season. Their program is focusing on RAB drilling, which will be used to identify targets for future diamond-drill programs.

In the fall of 2019, Rockridge Resources Ltd. (Rockridge) filed a NI 43-101 technical report for the **Knife Lake Cu-Zn-Ag-Co VMS** project. They reported



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Indicated Resources of 3.8 Mt at 1.02 per cent copper equivalent (Cu Eq) (0.4 per cent Cu Eq cut-off) or 3.8 Mt at 0.83 per cent Cu, 3.7 g/t Ag, 0.097 g/t Au, 82 ppm Co and 1740.7 ppm Zn. Inferred Resources are reported to be 7.9 Mt at 0.67 per cent Cu Eq (0.4 per cent Cu Eq cut-off) or 7.9 Mt at 0.53 per cent Cu, 2.4 g/t Ag, 0.084 g/t Au, 53.1 ppm Co and 1454.9 ppm Zn. In November Rock-ridge completed their field program, which identified 11 drill targets, three of which are high-priority and are within a six-kilometre radius of the Knife Lake deposit.

In the fall of 2019, ALX Resources Corp. (ALX) (formerly ALX Uranium Corp.) purchased 5,064 ha from Eagle Plains Resources Ltd. to add to its **Falcon Nickel** project, which has since been renamed **Firebird Nickel** project. ALX continued to increase its land holdings and released assay results of up to 3.13 per cent Ni from the Firebird Nickel property. In early 2020, ALX commenced drilling and two of the first three holes intersected nickel-copper sulfide mineralization. Operations were suspended in April due to COVID-19. In June the company was able to begin surface exploration, which consisted of ground follow-up on historical airborne EM anomalies, and detailed investigation of a gold and platinum group elements (PGE) showing discovered near

the property. In July, promising assay results of up to 2.43 per cent Ni were released, and in August ALX Resources Corp. announced that they have entered into an agreement with Rio Tinto Exploration Canada in which RTEC would earn 80 per cent of the project over six years (51 per cent after three years).

UEX Corp. began a drill program at their 100 per cent owned **West Bear Co-Ni** project. They completed 126 drillholes, totalling 11,412.5 metres. The known extents of the deposit were expanded along strike from 225 metres to 600 metres. At the end of April, UEX Corp. filed a NI 43-101 technical report for the deposit, which updated the Indicated Resource estimate to 1,223,000 t grading 0.19 per cent Co and 0.21 per cent Ni, which is equivalent to 5,122,000 pounds of Co and 5,662,000 pounds of Ni. The resource estimates were determined using a cut-off grade of 0.023 per cent cobalt equivalent (Co Eq).

In February, Forum Energy Metals Corp. (Forum) released promising assay results from their 100 per cent owned **Love Lake Nickel-Copper-PGM** project in the Peter Lake Domain. Late in the summer the company commissioned a 3,500 line-kilometre airborne magnetic survey with 100-metre line spacing. Two new targets were identified in addition to geophysical confirmation of the historical What Lake occurrence. Ground

exploration consisting of mapping and sampling (rock and soil) is underway.

Last fall, Searchlight Resources Inc. commissioned time domain electromagnetic (TDEM) and magnetometer surveys on their **Flin Flon North** property.

By September 2020, Transition Metals Corp. had completed a helicopter-supported, tree-top, bio-geochemical survey and bedrock sampling at the **Wollaston Copper** project, which is located along strike 60 kilometres southwest of Janice Lake.

In August 2020, Copper Reef Mining Corp. changed their name to Voyageur Mineral Explorers Corp.

## INDUSTRIAL AND SPECIALTY MINERALS

The Government of Saskatchewan recently announced, as part of their 2020-2030 Growth Plan, \$31M in funding for a Rare Earth Processing Facility that will be owned and operated by the Saskatchewan Research Council (SRC). Construction of the facility will start this fall, and the facility is expected to be fully operational by late 2022. Construction of this facility represents a significant development in Saskatchewan—and Canada—regarding rare earth elements (REE). It is expected the facility will contribute to heightened exploration for these elements and stimulate work



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on further developing known deposits, such as those present in the **Hoidas Lake** and **Alces Lake** areas. Work undertaken at SRC suggests that recovery of heavy REE contained in uranium ores from deposits in the Athabasca Basin may be profitably achievable in the future.

Between August 2019 and September 2020, Appia Energy Ltd. (Appia) was the only company actively involved in developing a REE project in Saskatchewan. Appia's REE project is located near **Alces Lake** in northern Saskatchewan, approximately 34 kilometres east of Uranium City and 135 kilometres west of Stony Rapids. By mid-August 2019, Appia had completed drilling 2,042.1 metres from 44 shallow diamond-drill holes in five previously identified surface zones, and discovered a new subsurface zone (the **Richard zone**). Geochemical analysis of core obtained from this drilling identified very rich mineralization, with local intersections through near-solid monazite returning up to 49.17 per cent total rare earth oxides (TREO) over a 3.7-metre interval within a 15.6 metre interval grading 16 per cent TREO from a drillhole in the **Ivan zone**. Of the 44 holes, 10 showed intersections with >10 per cent TREO and 20 showed intersections with >1.4 per cent TREO.

Eight new surface zones (**Biotite Lake, Quartzite, Thomas, Cone, Danny extension, Stan, Jason, and Bo-Mikaela**) were discovered by Appia by the end of November 2019. The Biotite Lake zone was identified 1.8 kilometres west of the **Wilson zone**, whereas the others are located closer to the Wilson

zone. Three outcrop grab samples from the Biotite Lake zone averaged 3.09 per cent TREO. From the Quartzite zone, located roughly 250 metres north of the Wilson zone, three channel samples returned assays of 0.47 per cent TREO on average. Traced for a surface length of 42 metres, the Quartzite zone was reported to be the second longest zone on the property, after the Wilson zone. The presence of significant concentrations of gallium (Ga), another critical metal, in the REE-rich mineralization was also reported. Concentrations of up to 0.12 per cent Ga<sub>2</sub>O<sub>3</sub> were obtained from samples rich in monazite.

On May 14, 2020, Appia announced a two-phase 2020 exploration plan for their **Alces Lake** property. Phase I involved mainly detailed surface work (prospecting, mapping, sampling and overburden trenching along previously identified trends of radiometric anomalies, as well as audiomagnetotellurics and ground penetrating radar geophysical surveys to prioritize drill targets), and Phase II primarily involved drilling (targeted diamond drilling along the strike extension of the **Wilson, Charles** and **Ivan** zones, and reconnaissance drilling on select regional geological and geophysical targets) with further ground prospecting, mapping and sampling over historical REE occurrences, including heavy mineral and monazite-bearing evaluation of the Alces Lake beach sands.

During Phase I, Appia acquired two new claim blocks contiguous with the Alces Lake property, expanding the property to a total of 17,577 hectares.

One of the claim blocks acquired is west of the **Hawker Lake Uranium** mine and the other encompasses the **McInnis Lake U-Mo** showing. On August 6, 2020, the company announced that they had identified over 50 pegmatite occurrences similar to previously known low-grade rare earth-bearing pegmatites. The identified zones include the **Ermacre, Mason, Sean, Ken** and **Scott** zones, and the historical Oldman River monazite occurrence.

Phase II drilling along the **Ermacre-Hinge** to **Charles-Wilson** corridor began in mid-August and was ongoing at the time of writing.

Results of geochemical analyses of surface samples collected during Phase I include 4.2 per cent TREO from an outcrop grab sample collected at the Ermacre zone and 1.12 per cent TREO from a 4.69-metre channel sample from the historical Oldman River occurrence. Gallium concentrations at the Ermacre and Oldman zones are similar to previously reported gallium results in similarly REE-enriched samples from the Wilson zone.

### HELIUM

Helium activity and production in southwestern Saskatchewan continues to grow. In July 2020 North American Helium Inc. announced initial production from the company's first single-well helium purification plant near **Battle Creek**.

Two other wells are currently producing: The Weil Group has one well at its **Mankota** facility; and Canadian Helium Inc. is producing from one well at its **Wilhelm** site.

There are an additional 26 wells targeting helium in the province that have been cased or completed and, as of September 17, 2020, another 11 wells that have been licensed (planned). In total, over 1.96 million hectares have been leased or permitted for exploration and development of helium in the province; most of this activity is focused in southwestern Saskatchewan. ✖


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# THE NORTHERN PROSPECTOR'S JOURNAL

THE VOICE FOR PROSPECTORS & MINERAL EXPLORATION IN CENTRAL CANADA

## We want to be YOUR VOICE.

The Manitoba-Saskatchewan Prospectors and Developers Association, along with DEL Communications decided to **launch** a monthly newsletter, the Northern Prospector's Journal rather than only our annual magazine.

It was created out of the need for more communication and education among those in the mining industry, government and First Nations communities, and to promote exploration within Manitoba, Saskatchewan and Nunavut. Our association represents the junior exploration company, project generator and the prospector, as well as contractors and suppliers to the exploration and mining industry.

The Northern Prospector's Journal is a monthly publication that will cover important topics in the mining industry, including government releases, public company exploration activities and stories of events and people in our industry. Most of all we want to be your voice where you can express concerns on issues affecting our industry, whether that be policies, infrastructure, regulations or whatever activities that have a negative effect of your company's or a prospector's ability to raise capital or carry out your programs, in an environment with relative security of ownership and the spending of funds.

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# NEW RARE EARTH PROCESSING FACILITY IN SASKATCHEWAN TO SECURE NORTH AMERICAN SUPPLY CHAIN

By Rebecca Gotto, SRC Communications

In the coming decade, the need for rare earth elements (REEs) will increase many-fold due to their importance in high-growth technology areas such as wind turbines and electric cars. Canadian rock formations hold 12 per cent of the world's rare earth elements measured resources. But currently, no REEs are being processed in Canada due to both a Chinese monopoly as supplier and end user, as well as the lack of a fully developed supply chain in North America.

The Saskatchewan Research Council (SRC) is looking to change that by securing an early and important piece of the supply chain for industry – a rare earth processing facility. The \$35-million facility was announced in the summer of 2020 by the Government of Saskatchewan. The facility will be located in Saskatoon, Saskatchewan and completion is slated for the fall of 2022.

The facility, a first-of-its-kind in North America, will begin to establish a REE technology hub in Saskatchewan, forming an industry model for future commercial REE initiatives and supply chain development.

A key element of the facility is a commercial processing plant, which will include concentration and separation stages and treat monazite sands at approximately 60 per cent concentration. Monazite is a source of mainly so-called “light” REEs (especially cerium, lanthanum, praseodymium, neodymium), which are some of the critical elements for the permanent magnets used in clean technologies. SRC will work with the mining industry to secure this feedstock from across Saskatchewan, Canada and internationally.

An intermediate concentrate of mixed rare earth carbonates will be produced from the concentration plant and further

processed in a separation plant to produce separated rare earth oxides, as the market requires. These will be sold by SRC and further refined and processed to provide the inputs that original equipment manufacturers (OEMs) require.

The treatment capacity of the plant will be 3,000 tonnes per year, producing an initial product: mixed rare earth carbonate. Part of the mixed rare earth carbonate will be fed to the separation plant to produce approximately 500 tonnes of separated, individual rare earth oxides, excluding cerium.

SRC's rare earth processing facility will follow the most stringent operating standards. To minimize the risk for the environment, the plant will be designed to have zero liquid discharge, which means that there will be no solution waste streams that are released into the environment. All solid waste will be handled and disposed of properly following regulations and procedures, as SRC and mining companies in Saskatchewan currently do.

SRC has decades of experience in testing and development of concentration and separation technologies of REEs from various minerals, as well as operational experience. With mining clients in Canada and across the world, SRC has developed and piloted many REE concentration and separation processes. This experience, combined with being located within Saskatchewan's world-class mining jurisdiction that has a vibrant and sustainable uranium industry, is a key asset to future success. The uranium industry also produces a REE-rich solution waste stream (containing mainly so-called "heavy" REEs) that can be an additional feed source for the plant, as markets require.

SRC currently offers a large variety of REE services through existing service lines and facilities. These include:

- Rare earth processing technology development and commercialization
- Uranium tailings processing and treatment; recovery of thorium and uranium
- Validation and demonstration of rare earth processing technologies in bench, pilot and semi-commercial scale
- Rare earth production from bastnaesite, apatite and uranium processing waste

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**The facility, a first-of-its-kind in North America, will begin to establish a REE technology hub in Saskatchewan, forming an industry model for future commercial REE initiatives and supply chain development.**

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Once the facility is operational, SRC will be able to offer a number of other services to industry including potential toll separation of individual rare earth elements and potential toll processing of monazite. This will mean that mining companies around the world will have the option to sell their feedstock to a North American rare earth processing facility for the first time.

In the future, SRC plans to use this facility as a starting point for the creation of an REE technology hub, which will likely include developing downstream and upstream aspects of the REE supply chain. Future development also includes new applications for lanthanum and cerium. In order to do this, SRC is currently developing capabilities for downstream rare earth product development and the production of magnets and alloys.

The future certainly looks bright for the rare earth elements industry in North America and this Facility and the proposed REE technology hub will play a key part in securing a supply chain right within Canada.

For more information, please visit [www.src.sk.ca/ree](http://www.src.sk.ca/ree). ✖

## RARE EARTH PROCESS





# THE LITHIUM ONE PROJECT IN SOUTHEAST MANITOBA

By Aaron Warren and Carey Galeschuk

**T**he Lithium Division of New Age Metals (TSXV : NAM) is the largest mineral claim holder in the Winnipeg River Pegmatite Field, where the Company is exploring for hard rock lithium and various rare elements such as tantalum and rubidium.

The project is geologically situated in the southern extension of the Bird River Greenstone Belt. The pegmatites are associated with the Greer Lake and Shatford Lake Pegmatite Group of the Cat Lake – Winnipeg River Pegmatite Field.

The Winnipeg River Pegmatite Field hosts the World-Class Tanco Pegmatite, which has been mined since 1969 at the Tanco Mine Site, in various capacities and for various commodities. This pegmatite field is hosted in the Archean age Bird River Greenstone Belt and into the surrounding granites.

NAM's Lithium One Project hosts the Silverleaf Pegmatite, which was historically mined in the late 1920s for spodumene and probably represents one of the first spodumene operations in North

America. The central, most economic, portion of the pegmatite is composed of lepidolite surrounded by an envelope of spodumene and quartz. Due to its high lithium content, spodumene is considered the most important lithium ore mineral.

Historic drilling of the Silverleaf Pegmatite from the 1950s indicated a tabular pegmatite body dipping 30° S and extending 168 metres (550 feet), while ranging in thickness from five to 11 metres over a drilled length of 245 metres.

The Company's Phase 1 Exploration Program in 2018 sampled several of the known lithium-bearing pegmatites. The purpose of the exploration program was to obtain modern-day assay analyses of the Pegmatites and to ground proof some of the historic Pegmatite locations. Numerous Pegmatites and Pegmatite swarms that were not sampled in the 2018 program will be explored during the 2020 fall program.

The Tanco Mine was bought by a Chinese company in early 2019. The mine was owned by the Cabot Corporation who announced in January 2019 that it sold the mine and Speciality Fluids Division to Sinomine Rare Metals Co. Ltd. at a purchase price of \$130 million (US).

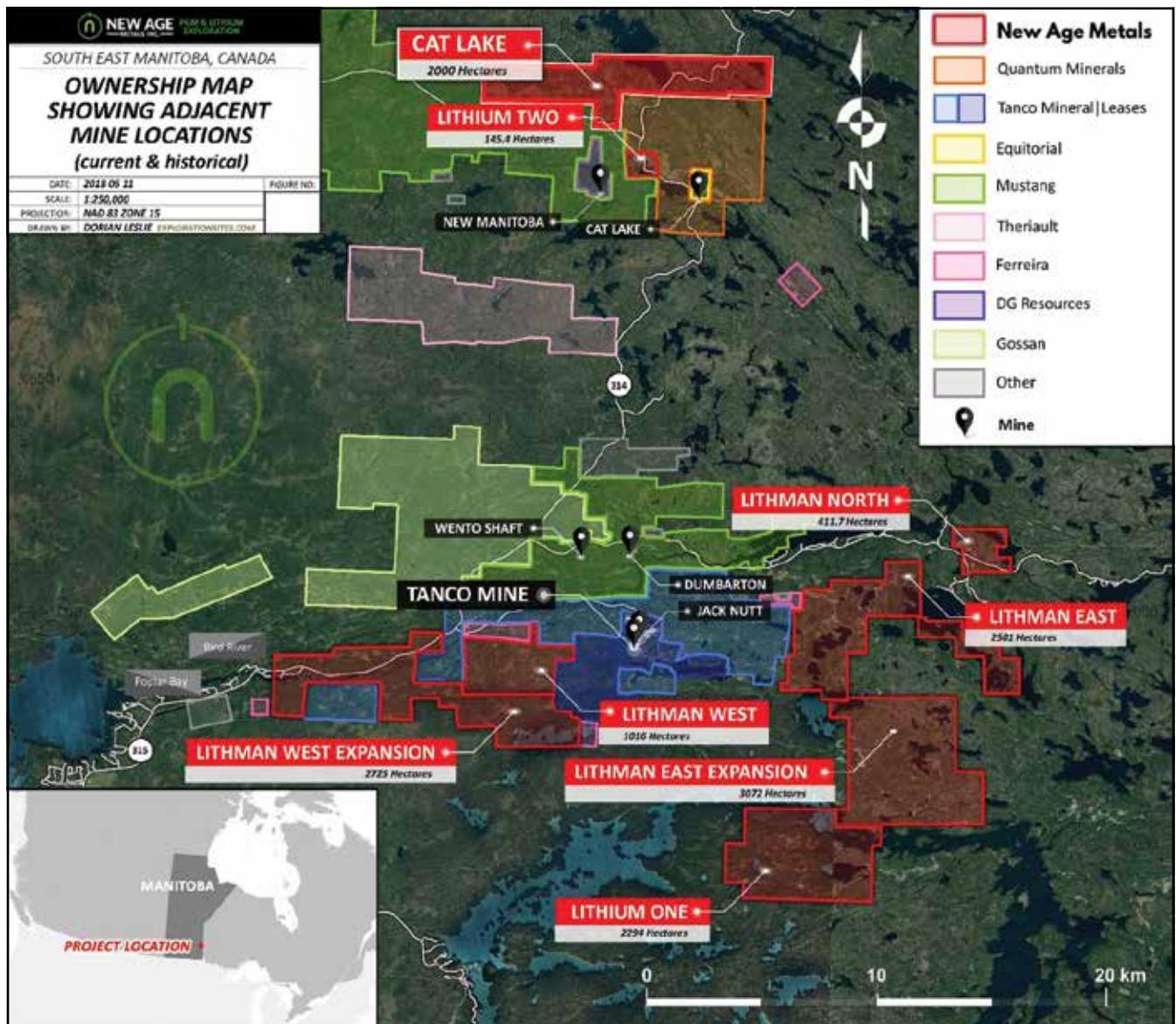
The company believes this development is positive for the potential that the area may become a significant contributor to North American lithium and rare element supply.

The company is seeking a joint venture partner that has the financial capability to assist in the exploration and development of not just the Lithium One Project but the seven projects that the company owns 100 per cent of. Due to the under-explored nature of the projects, there is considerable upside for identifying high-grade lithium that future partners may potentially benefit from.

With all the recent announcements from automakers and battery companies regarding the upcoming production of

electric vehicles in North America, the company believes it is in a position to ride the EV wave as a potential source of the spodumene that's used in creating lithium hydroxide.

If there are investors that wish to learn more about the company, its future plans regarding the lithium projects or its flagship project the River Valley Palladium Project they are welcomed to reach out to the company by phone or email. The number to reach the New Age Metals field office is 1 (613) 659-2773 or alternatively reach them by email at [info@newagemetals.com](mailto:info@newagemetals.com). Alternatively, visit the company's website at [NewAgeMetals.com](http://NewAgeMetals.com) or follow their progress on Facebook, Twitter, LinkedIn or Instagram. ✘





# ROCKCLIFF METALS:

## Advancing towards a production decision in the largest VMS district in the world

By Cinthia Volpani

**R**ockcliff is the largest junior landholder in the Flin Flon-Snow Lake greenstone belt home to almost 100 years of continuous mining and 200Mt of production. It is the most prolific volcanogenic massive sulphide (“VMS”) belt in Canada and the largest VMS district in the world. With multiple advanced stage, near surface deposits and an existing leased centralized mill, Rockcliff is now working on selecting the project to be the first one to create Manitoba’s newest copper by 2022.

### THE HUB AND SPOKE STRATEGY. EMBRACING TECHNOLOGY.

Rockcliff’s vision commits to develop “small profitable mines” that accelerate the world’s transition to a sustainable future and designing its operations

with intention to optimize shareholder returns. By embracing and integrating technologies in its mine design, Rockcliff intends to reduce health, safety and environmental risks, lower economic risks and maximize community value.

The Hub and Spoke Strategy consists of multiple advanced stage deposits within hauling distance of a leased mill and tailings facility, leveraging existing infrastructure designed for maximum reusability. The leased Bucko Mill Complex plans to receive 1,500tpd of ore sorted copper-rich material from selected deposits. Its strategic proximity to the surrounding properties enables easy and low-cost transportation of ore material. Bucko Mill’s development program is in progress and could be ready for production in late 2021.

### 2020 KEY MILESTONES

A Preliminary Economic Analysis (“PEA”) on Rockcliff’s 100-per cent owned Tower and Rail Properties is underway. Multiple studies and permits are being completed on both properties and at the Bucko Mill Complex. Advanced Exploration Permitting (“AEP”) studies are underway and the Bucko Mill environmental testing and metallurgical optimization studies have been completed.

Once all ongoing studies and permits are completed Rockcliff will have a construction decision in hand, which is anticipated by the second quarter of 2021.

### EXPLORATION UPSIDE: 4,500 KM<sup>2</sup> OF UNDEREXPLORED LAND PACKAGE

Rockcliff’s extensive drill program, on its 4,500 km<sup>2</sup> of properties, is associated with some of the best VMS-hosted geol-

ogy in the world. The drill program focused on enhancing the confidence of the Company's advanced-stage deposits and identifying other high-grade copper deposits within trucking distance to its leased mill.

In 2020, Rockcliff has updated the Mineral Resource Estimate for its three advanced deposits (Talbot, Rail, Tower). Presently, they host a combined Indicated Resource of 4.4Mt grading 4.5 per cent CuEq and an Inferred Resource of 3.5Mt grading 3.3 per cent CuEq.

Additionally, Rockcliff has been exploring on many of its other properties. At our 100-per cent owned Bur property, drill highlights include 13.51 per cent ZnEq across 3.26 metres and 15.64 per cent ZnEq across 1.94 metres. At our 100-per cent owned Freebeth property drill highlights include 5.28 per cent CuEq across 2.30 metres and 4.0 per cent CuEq across 4.7 metres. At the Laguna and Lucky Jack gold properties (optioned to Kinross Gold who are spending a total of \$5.5M to earn a 70 per cent interest), drill highlights have included multiple intervals in the 10-20 g/t gold range over widths up to 1.5 metres.

## THE TAKEAWAY

Rockcliff Metals is set to transition into a high-grade copper miner by 2022 in one of the most prolific and largest VMS districts in the world. Access to a 1,500tpd mill complex underscores the importance of a quick growth path from a developer to a miner. With over 4,500 km<sup>2</sup> of geologically endowed VMS properties, the Company is poised for long-term growth. The success of its PEA, currently underway, will determine future studies, where a positive outcome will transition Rockcliff into a high margin copper producer with outstanding blue-sky potential.

A combination of assets, a cornerstone financial investor and a successful drill program has created an opportunity for new investors and existing shareholders to be part of Rockcliff's vision of near-term production, long-term growth and becoming Canada's next copper producer. ✖



# WEST BEAR COBALT-NICKEL PROJECT UPDATE

By Cindy Chan



**T**he West Bear Cobalt-Nickel project is the first-of-its-kind deposit, and it's only getting started. Formed in 2001, UEX Corporation is a junior exploration company that was formed from two companies – Pioneer Metals and Cameco Corp. Roger Lemaitre, president and CEO of UEX, says the company's founding CEO at the time was three to four years ahead of where the uranium market was going to go.

"Our mission is unearthing energy metals, primarily uranium," Lemaitre says, adding that UEX dabbles a little in cobalt in addition to the 10 uranium deposits they have. "We have Canada's only primary cobalt deposit."

The company has four flagship projects: the Shea Creek property, the Horseshoe and Raven deposits, the Christie Lake property and the West Bear Cobalt-Nickel project.

According to the UEX website, the West Bear Cobalt-Nickel project is "a shallow, open-pit amenable and very high-grade cobalt-nickel deposit in the eastern Athabasca Basin that remains open in all directions for expansion. It ranges from 15 to 110 metres in vertical depth and is hosted in clay-altered rocks that extend into the basement below the unconformity".

UEX discovered the 100-per cent-owned West Bear Cobalt-Nickel deposit during the exploration programs that defined, evaluated and tested the area surrounding the West Bear Uranium deposit between 2002 and 2005. The West Bear Cobalt-Nickel deposit ranges between 30 to 110 metres in vertical depth and is hosted in soft, clay-altered rocks that extend into the basement below the unconformity. To date, UEX has been able to define cobalt resources at West Bear at a cost of approximately \$1.00 per pound.

The deposit is located in the heart of Saskatchewan's eastern Athabasca Uranium District. The Athabasca Basin is known for

its uranium production, but cobalt is commonly found in the same geological environments. The West Bear Cobalt-Nickel deposit is high-grade, containing 5.12 million pounds of cobalt and 5.67 million pounds of nickel.

For many decades, explorers used nickel and cobalt as a pathfinder element to find uranium, Lemaitre says. "Our goal at West Bear is to assemble a mineable cobalt resource in Saskatchewan, to become a safe, secure and ethical responsible source of cobalt for the North American market," he says.

"We produce cobalt in Canada primarily as a byproduct of nickel production," Lemaitre says. "Because cobalt is a byproduct, cobalt output in many jurisdictions, including Canada, varies little with fluctuations in cobalt prices or cobalt demand. As a primary cobalt deposit, any development and output from West Bear would have cobalt making all the decisions in terms of scale and output."

Over the past couple of years, UEX has drilled extensively, defining its existing deposits. Currently the size of the resource on its own is not enough to be economic just yet.

"We probably need to find a satellite deposit nearby for this to be of interest," Lemaitre says. "It's ongoing." ✕





# ALEX MACINTYRE & ASSOCIATES LTD.:

## THE POWER OF PEOPLE FOR OVER 60 YEARS

Article courtesy of Alex MacIntyre and Associates Ltd.

**S**tarted by the late F.A. MacIntyre in 1958, later evolving into Alex MacIntyre & Associates Ltd., the company has earned and maintained a reputation for tackling and successfully completing some of Canada's more difficult mining projects throughout its history.

Alex MacIntyre & Associates Ltd. has been supplying mine contracting services to the mining industry for over 60 years. With a head office, CWB-certified shops and equipment yards located in Kirkland Lake, Ont., MacIntyre has successfully completed shaft sinking and mine development contracts throughout Canada, the United States and South America.

Mining clients in recent years include Vale, De Beers, Barrick Gold, Kinross Gold, Agnico Eagle, Sudbury Contact, Hudson Bay Mining & Smelting, Canadian Malartic, Armistice Resources and Kirkland Lake Gold.

"We are really proud of our history, being one of Canada's oldest mining contractors, and that translates into a great resource of experience in very diverse projects," says James McDougall, manager of operations for MacIntyre. "I think being around as a successful mining contractor for this long also speaks to the kinds of relationships we have with our clients and the level of quality work we always aim for. Our clients' success is our suc-

cess; that's just how we look at the projects we take on."

McDougall continues, "Our commitment to safety and the results of this commitment also speak to our success. We have always strived to be the best when it comes to safety. There's no other goal anyone should ever shoot for than that. It's been very honouring to win some prestigious safety awards over the years, but for us, it comes down to the sustained quality of life our people have working for us. People in many industries talk about 'safety culture,' and it is the cornerstone of a successful safety program. We are currently over 2.5 million hours worked with no lost time incidents. That means our people home safe to their families every day."

Alex MacIntyre & Associates Ltd. is a uniquely diverse mining contractor as it provides services in all areas of mining, from shaft sinking, mine development and production, mine construction, electrical and mechanical installations, mechanized raise mining, mine dewatering to mine closures. They are also involved in surface mining and pits.

"We pride ourselves on being a full-service solution for our clients mining projects, and we have the experience and people to understand the projects needs and see it through," McDougall says. ✕



# ARROWHEAD HELICOPTERS LTD.: PROVIDING SAFE, RELIABLE AND EFFICIENT HELICOPTER CHARTER SERVICE

By Patrick Ede

**L**ocally owned and operated, Arrowhead Helicopters Ltd. has been providing their customers with safe, reliable and efficient helicopter charter services since 2013. Patrick and Jeffrey Ede operate the business in La Ronge, Saskatchewan. Providing safe, reliable and efficient helicopter charter service is Arrowhead Helicopters Ltd.'s main objective.

Arrowhead has been steadily growing adding another Bell 407 in 2018 for a fleet of two Bell 407s and a Bell 206 Jetranger B3, and has plans of adding another Bell 407 and a Bell 205 or Bell 212 to our fleet in the future. Arrowhead specializes in exploration support, remote diamond drill program support and external load operations, as well as wildfire management operations, wildlife surveying, water security surveys, search and rescue operations, medivac operations, powerline maintenance and patrol, aerial surveys and photography and helicopter

sightseeing tours. Arrowhead's experienced pilots are capable in precision long-line operations and passenger transport in remote locations, providing our customers with safe, reliable and efficient service. Our helicopters are utility-equipped to provide our customers with the right equipment for their projects in the most remote locations. Arrowhead has the capabilities to support our helicopters in remote locations with a 3,000-litre Jet A portable TransCube unit, eliminating the use of drums.

Arrowhead Helicopters Ltd. has adopted the Cirro flight management system. Cirro allows Arrowhead to operate an electronic flight bag with electronic flight reports that can be emailed to our customers as soon as the flight reports are approved. Cirro also allows our pilots to submit a risk assessment, weight and balance and flight itinerary for each flight to our operations manager for approval. Arrowhead Helicopters Ltd.'s



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safety management system is also incorporated through the Cirro system. Personnel at Arrowhead can submit any safety concerns to management for assessment and action.

Arrowhead Helicopters Ltd. helicopters are equipped with Sky-Trac systems for live map tracking and the capabilities for customers, flight crew, flight follower and management to communicate via text messages with the helicopter pilots and ground crew. Satellite phones are also installed in the helicopters for two-way communication with the customers, flight crew, flight follower and management. Arrowhead is approved by Nav Canada with an AM frequency to allow ground crew to communicate with the pilot from our handheld radios. Arrowhead is looking into options for hands-free communications for our handheld radios to give ground crew safer and more efficient operations.

Arrowhead Helicopters Ltd. has developed standard operating procedures for and is taking steps to fight against



the spread of COVID-19. Our standard operating procedures outline Transport Canada recommendations. During these uncertain times, flight crew and passenger safety is our top priority.

As local operators, we have relationships with local businesses and people in the surrounding communities, which is an asset in operation logistics. Arrowhead Helicopters Ltd. has also provided helicopter charter services throughout Canada and has established relationships with our customers throughout Canada. Arrowhead Helicopters Ltd. looks forward in providing helicopter charter services to our existing and new customers in the future. ✖



# INNOVATIVE NUCLEAR TECHNOLOGY HAS THE POTENTIAL TO TRANSFORM THE MINING INDUSTRY

By John Gorman, President and CEO, Canadian Nuclear Association



John Gorman

**P**owering remote sites has been a fundamental challenge for the mining industry for decades. Often diesel fuel must be used, which has significant logistical, environmental and cost implications. Where fossil fuels are involved, energy costs can be volatile – and mining companies face increased carbon taxes that could cost the industry millions of dollars each year.

According to a report by the Columbia Centre of Sustainable Investment (CCSI), energy can account for around 15 per cent of mining costs and this can raise to 40 per cent in metal mines. Trucking fuel out to remote or off-grid locations can add to the cost. So needless to say, industry-wide, there is a strong incentive to explore energy sources that are more cost effective and with low emissions.

This is where leading edge nuclear technology can play a huge role. Small modular reactors (SMRs) have the potential to transform the mining industry.

SMRs are nuclear fission reactors designed on a much smaller scale, power output and cost – and with leading-edge safety features. Their power output ranges from two megawatts to 300 megawatts.

According to Vic Pakalnis, CEO of Mining Innovation Rehabilitation and Applied Research Corp. (Mirarco), SMRs could cut the cost of energy for mines in half – or even more for Arctic sites. Furthermore, according to the SMR Roadmap, a report initiated by the Canadian government, the cost of a 20 MWe SMR used for mining has a 25 to 60 per cent lower LCOE (levelized cost of electricity) than diesel. A separate 2019 study from the U.S. NEI concludes that the cost of producing electricity from a micro-reactor is \$0.40/kWh while diesel is \$0.75/kWh.

There are several factors that help drive cost and operational efficiencies through the use of SMRs for the mining industry – including their scalability, ease of transportation, and as a carbon-free green energy source.

SMRs are modular in design with maximum factory-construction, making them scalable and easy to transport for mining companies and local communities both on and off-grid.

They can work even in the most challenging location, providing a zero-emissions, carbon-free solution to provide power for equipment, vehicles, heat and to help reduce the amount of energy needed for ventilation. Refuelling diesel in remote locations can be costly and difficult. Depending on their design, SMRs can last on their fuel anywhere from three years to a decade.

Beyond providing the opportunity to

significantly improve the competitiveness of Canadian mining operations, SMRs have the potential to provide zero-emissions energy to historically underserved areas, unlocking future opportunities for mineral deposit exploration and mining project investments.

Momentum for SMRs in Canada is building. In August, Alberta signalled its intention to sign a Memorandum of Understanding, joining three other provinces – Ontario, New Brunswick, and Saskatchewan – to explore developing and deploying SMRs. And this fall, the federal government is expected to launch an SMR Action Plan that builds upon the 2018 SMR Roadmap.

The 2020 Canadian Minerals and Metals Plan recommended that governments and industry should continue to study the feasibility of SMRs for mining operations, as well as the potential market for this technology.

Canada is uniquely positioned to lead the SMR race because of our world-class laboratories and R&D capabilities and a well-respected regulator that can handle technological advances. Canadian Nuclear Laboratories has set a goal to demonstrate the commercial viability of SMRs by 2026, with a view to positioning Canada to take a leadership role in this emerging nuclear technology.

The potential for SMRs to transform the mining industry is huge. And the time to explore this is now. Not just to help drive significant cost efficiencies and drive competitive advantage – but in helping meet Canada's net zero emissions by 2050 goals and creating a clean future for all of us. ✖

# DIAMONDS AND GOLD AT TREE RIVER

By Richard Drechsler



Panel sampling at Tree River in 2020.

**S**ilver Range Resources Ltd. (TSX-V:SNG) is a precious metals explorer and project generator focused on discovering world class precious metals projects in North-

ern Canada and Nevada. Its Tree River Property in the Kitikmeot Region of Nunavut appears to be one such project.

A recent discovery of alluvial diamonds by a University of Alberta re-

search team from the gold-rich Tree River Conglomerate (“TRC”) supports Silver Range’s thesis that Tree River has world class potential. “The diamonds [...] occur in ancient sediments that are an exact analog of the world’s biggest gold deposit – the Witwatersrand Goldfields of South Africa, which has produced more than 40 per cent of the gold ever mined on Earth,” said Graham Pearson, researcher in the Faculty of Science at the University of Alberta.

Gold was discovered at Tree River in 1993, and limited followup work was conducted in the current project area by previous operators throughout the 1990s and early 2000s. Grab samples collected from higher-grade zones within the basal conglomerate horizon returned up to 142 g/t gold. Background gold content of the basal TRC horizon averaged 0.203 g/t gold from numerous samples collected along its length (omitting all assays greater than 2.5 g/t). Higher-grade pods of gold mineralization within much larger envelopes of lower grade material in regionally extensive, fluvial to shallow marine conglomerates are characteristic of the Witwatersrand Goldfield and the recently discovered Pilbara region of Australia.

Silver Range acquired the Tree River Property in 2018. Its initial small-scale program identified two areas of significant gold mineralization within the basal conglomerate horizon – Main Zone and West Zone. Grab samples collected in 2018 from Main Zone assayed up to 114 g/t gold and a chip sample returned 540 g/t gold over 0.20 metres. The Main Zone is exposed intermittently over a strike length of 650 metres and contains visible gold at the highest-grade exposure. The West Zone lies 360 metres

along strike and grab samples yielded up to 14.05 g/t gold. This zone is partially exposed over a length of 300 metres and remains open along strike in both directions. Large areas remain unexplored along the seven kilometres of the host gold-bearing conglomerate

In 2020, Silver Range collected a >45 kg, one-metre-by-one-metre panel sample from each of its two zones. The samples returned 36.3 g/t and 0.29 g/t gold from Main and West zones, respectively. Silver Range also collected a sample of the prospective horizon for age dating. Zircons within this sample yielded a maximum deposition date of  $2964 \pm 9$  Ma. This age date indicates that the TRC was deposited during the inferred Mesoproterozoic gold deposition event associated with the first organic production of oxygen and consequent fixing of soluble gold. Conglomerate-hosted gold deposits in the Witwatersrand Goldfields and the Pilbara region also occur within this age bracket.

Throughout the course of Silver

Range's work on the Tree River Property, Pearson and his team of researchers from the University of Alberta and Pennsylvania State University were simultaneously following up an unconfirmed report of diamonds in the TRC by northern geologist Valerie Jackson. In 1997, while mapping the region Jackson collected samples from the conglomerate for zircon age dating. During processing of the samples to recover zircons, two suspected diamonds were also extracted. The discovery was never verified or formally reported.

Pearson's research team collected two samples from the area where the 1997 sample was taken. Three diamonds were recovered from these samples, which were collected from the basal portion of the TRC on Inuit owned lands about 300 m from the boundary with the Tree River Property.

"My jaw hit the floor," said Pearson. "Normally people would take hundreds of kilograms, if not tons of samples, to try and find that many diamonds. We

managed to find diamonds in 15 kilos of rock that we sampled with a sledgehammer on a surface outcrop."

Work completed thus far by Silver Range and the University of Alberta research team suggests that the Tree River Project is analogous to the richest gold districts in the world, and is now also the site of Canada's newest diamond discovery. As such, Silver Range intends to conduct systematic sampling, geological mapping and focused prospecting at its Tree River Property in the coming season to evaluate the large-scale gold and diamond potential of the TRC. ✖



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# SASKOBA LAKE VMS, GOLD AND SILVER TARGETS: A PARTNERSHIP

By Gary Clayton Dunn, Prospector, Claim Holder and Graduate of the Haileybury School of Mines (1974) followed by some 45 years Canada-wide in the mining and exploration industry



Left to right: Bart, Len, Jonathan and Stacey, MMI survey crew, Flin Flon, Manitoba

**T**he Saskoba Lake Area is located in Saskatchewan, proximal to the Manitoba border, some 35 kilometres south of Flin Flon/Creighton, where the highly prospective Flin Flon Greenstone Belt is host to many past and present producing mines.

The 777 Mine at Flin Flon produces 4400 tpd at a grade of 1.56 per cent Cu, 4.24 per cent Zn, 1.73 g/t Au and 25.79 g/t Ag, slated for closure in June 2022. 215 kilometres east, the Lalor Mine produces 3,400 tpd from 14.2 Mt at a grade of 5.12 per cent Zn, 0.69 per cent Cu, 2.61 g/t Au and 26.5 g/t Ag with an 18-year mine life. The Reed Lake Mine in Manitoba produced 1,300 tpd from 1,564,000 t at a grade of 3.80 per cent Cu, 0.41 per cent Zn, 0.38 g/t Au and 4.91 g/t Ag.

The current key claims held by the partnership at Saskoba Lake are MC00010625, MC00011043, MC00014017 and MC00014165, all in good standing well into 2022, part of a larger group of nine claims totalling 4614 ha. The original staking was largely based on the “Provisional and Interpretive Map of Sub-Phanerozoic Geology, Flin Flon Domain and Eastern Glennie Domain, NTS 63 K Misc. Report 2010-4.2, R.M. Morelli.” This map suggested the possible extension of the Sandy Bay/Birch

Lake domain, into the project area, which includes the Birch, Coronation, Flexar and Konuto past-producing mines. SMDI 0022, 2726, 2727 and 2736 document massive sulphide and/or gold bearing occurrences in this project area.

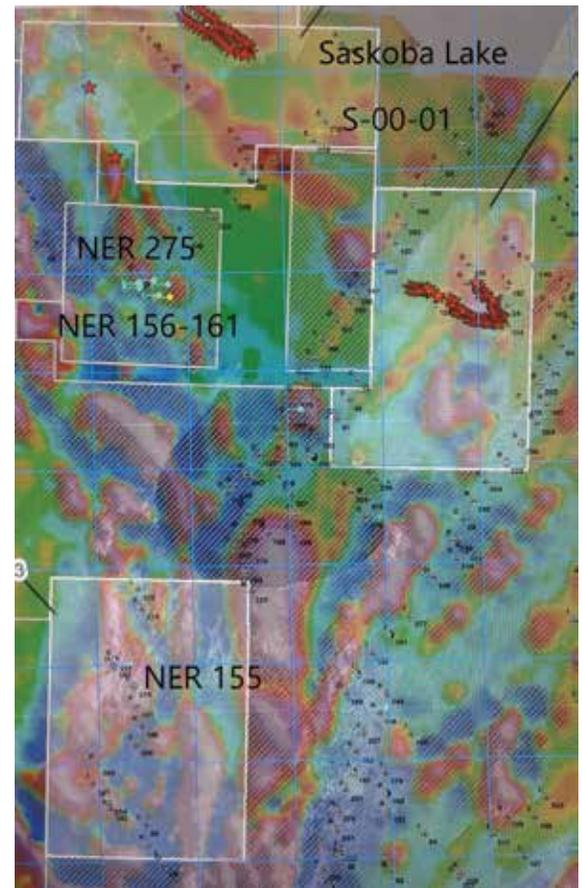
There are two historical diamond drill holes on the claims currently held by the Partnership. Hole S-00-01 drilled by M’Ore Exploration Services Ltd. in 2000, on present day claim MC00010625, intersected 20.6 metres of disseminated, veinlet and stringer pyrite-pyrrhotite-chalcopyrite mineralization between 97.8 and 118.4 metres in chloritized basalt. Assays to 2.1 per cent Cu, 0.3 per cent Zn and 10 g/t Ag were reported. In 1998, Hudson Bay Exploration & Development Company Ltd. drilled hole NER 155 on present-day claim MC00014165, which intersected a silicified tuff and dacite flow from 93.93 to 118.50 metres. The rock has been pervasively silicified, about 10 per cent, with 50 per cent chlorite and 10 per cent pyrite, 10 per cent pyrrhotite and tr chalcopyrite noted. Appearance of quartz eyes and flow breccia. Gold anomalous over >3 metres (up to 5.01 g/t Au over 0.8 metres). Silver anomalous over 19 metres (up to 2.06 g/t Ag over 0.46 m). Of note: 11.3 metres of lost core in this zone not logged or assayed.

During the summer of 2015, the partners conducted a mobile metal ion (MMI) orientation survey under the direction of Dr Mark Fedikow, PhD, P/Geo, H.B.Sc, M.Sc., P/Eng. C.P.G. The program targeted an area north of Hudbay's drillholes NER 156-161 (5.03 per cent Cu over 0.57 metres, 5.14 g/t Ag over 0.3 m, 1.80 per cent Cu over 5.72 metres, 2.06 per cent Cu over 2.2 metres and Cu/Zn/Au/Ag intercepts over 60.85 metres in NER 275) and proved successful in detecting rock types and minerals below the Phanerozoic cover.

Subsequently in 2018, the Government of Saskatchewan, in collaboration with the Geological Survey of Canada and the Manitoba Government, released GSC Open Files 8440 and 8443, which covered part of the project area, and included helicopter-borne TDEM and Magnetometer surveys as well as fixed wing Gravity and Magnetometer surveys.

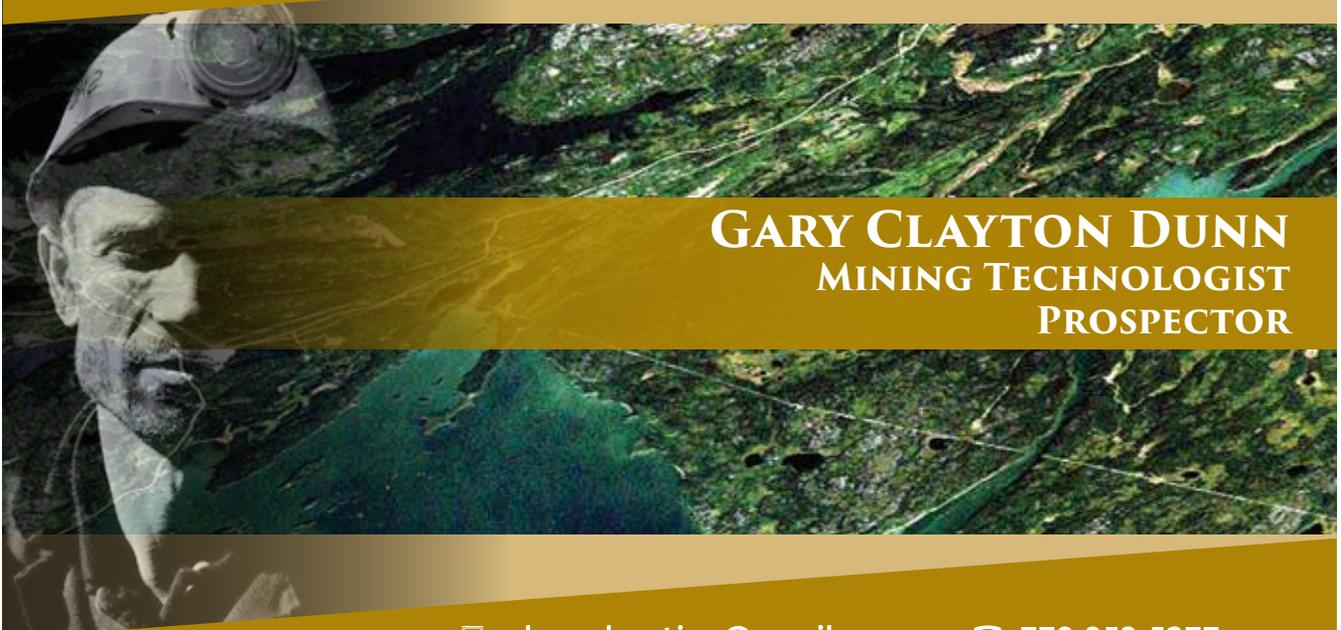
During the summer of 2019, the partnership which had grown to include Gary Dunn, Lenard Reibin, Bart Hunter, Jonathan Dunn and Stacey Dunn, flew in from Flin Flon and completed MMI sampling in the vicinity of select EM conductors and coincident Magnetic anomalies identified by the airborne surveys. The results were quite encouraging, with VMS suite anomalies and in addition coincident copper-gold anomalies over widths of 100 metres, which connected from line to line. These anomalies are "open" on strike and require follow-up sampling.

The partnership is a family affair and has achieved great success operating on a tight budget. The "modus operandi" has been to mirror the successful exploration in Manitoba utilizing airborne surveying and MMI soil sampling. The next logical steps are follow-up MMI sampling and DEEP-EM ground geophysical surveying followed by diamond drilling. It is time to bring in a junior mining company with the skills and resources to follow up on the successful exploration to date. ✘



Saskoba Location map, airborne TDEM interpretation, DDH locations and MMI survey locations

## COPPER-GOLD-SILVER CLAIMS FOR OPTION FLIN FLON/CREIGHTON CAMP



**GARY CLAYTON DUNN**  
MINING TECHNOLOGIST  
PROSPECTOR

 [gdeexploration@gmail.com](mailto:gdeexploration@gmail.com)

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# CORE BOX PRODUCTION WORKERS: TALENTS REVEALED DURING COVID-19

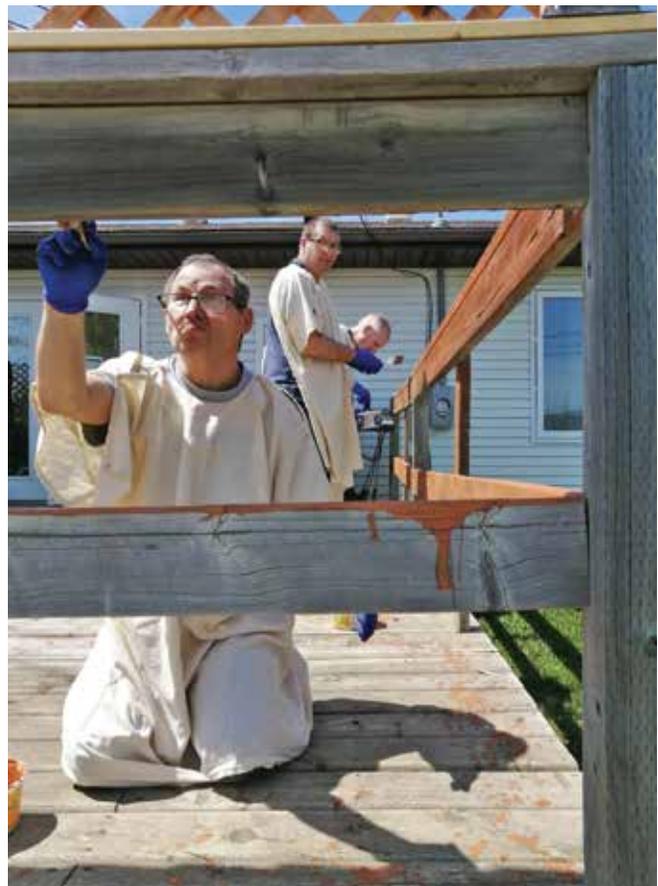
By Marilyn Jonas

**C**COVID-19 has created an unexpected turn in life for the individuals that Porcupine Opportunities Program (POP) supports, including POP's core box team, which includes eight individuals experiencing disability.

Porcupine Opportunities Program, a not-for-profit agency located in Porcupine Plain, Sask., has a 40-year history of producing core boxes for the mining sector. The business, which started as an opportunity to engage individuals experiencing disabilities within the workforce, continues today, producing tens of thousands of boxes per year.

The onset of the pandemic in mid-March was a game-changer for all of the individuals POP supports, including those involved in the production of core boxes. As of mid-March 2020, shortly after the pandemic was declared, the agency moved all of the individuals in its care to their homes on a full-time basis. Extra programming and activities were provided from home while, like other households, all unnecessary travel, shopping and visits were eliminated. Core box production continued with regular support staff, augmented by students.

As with many individuals throughout the province and around the world, this was a new experience for many of the individuals that POP supports. Most had always worked and had never been at home for any length of time; however, we quickly found that we had some individuals with surprising talents and interests.





We have some “hookers”: Byron, who typically straps boxes, and Darren, who builds boxes, each undertook a major project involving hooking rugs.

We have some cooks. Everyone normally takes part in elements of meal preparation; however, through their time at home, we’ve seen some bakers emerge. Aaron, who works in our sawing operation, was especially keen on both the production and consumption of baked goods. His house partner Dennis, another saw and box man, enjoyed cleanup (unlike Aaron), as well as the consumption of the baked goods. Dennis also spent extra time wearing off the results of the baked goods on the treadmill.

We have some painters. Dwayne, who is primarily involved in our sawing operation, found an interest in detail painting: the more intricate, the better. His brother Darrell, one of our box builders, enjoyed broader strokes and took an active part in staining and painting their deck and other bits and pieces around their home as part of a yard beautification contest that we held this spring.

Andrew, who saws and walks and walks and saws, beat a

clear trail around his yard and was a lead on many of the hikes that he and his roommates embarked on.

While the time at home for the individuals we care for has gone much better than we expected, we are still being lobbied steadily with regards to “when they can get back to work”. As of August 2020, we started to bring individuals back to our day program, with each home coming to our main day program one to two days per week. We are looking to expand this to having individuals from our core box team start work in September, although we will continue to isolate them by house, with individuals working just one to two days per week initially. A complete reopening, with everyone back to work, will wait for a bit, until we see how back-to-school goes and get a sense of the risk of infection should a second wave occur.

In the interim, and thanks to the availability of our student labour force, we have been able to build a solid inventory of boxes to support drilling that may occur this fall and winter. We look forward to working with our mining partners as the reopening continues to move forward. ✖

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# AIR BOOSTER REBUILDS, NEW LIFE FOR YOUR BOOSTER ON TODAY'S TIGHT BUDGETS

By Sam Dick, P.Eng., Engineering Coordinator, Certified Measurement and Verification Professional (CMVP), Certified Compressed Air System Specialist (CCASS)

If the air stops, the mine stops. So as an air compressor ages, the risks of extended outages and lost production increase dramatically. Even still, with budgets tightening across the mining industry, it can be difficult to find the capital for a new compressor. Comairco's new booster refurbishment service may be the most economical way to breathe new life into your old air booster packages.

Electric-driven compressed air booster packages can be found next to any air-powered drill requiring an elevated compressed air pressure (typically 250-350 psig). The booster takes compressed air from the mine's standard supply and boosts the pressure as high as 400 psig. These compressors are typically mounted on a towable wheelbase with all the accessories, controls, and fire suppression, so it can be easily moved around with the drills as required.

The harsh conditions of a mine can wear on even the most rugged equipment, and these air booster packages are no exception. Coolers can become caked with oil and dust, elevated operating temperatures can lead to varnish formation in the air end, and harsh atmospheres can cause internal corrosion. Over time, these conditions will hamper

the performance of the compressor, and eventually lead to a risk of catastrophic failure.

Comairco has been a critical supplier to the North American mining industry since 1972, and offers a wide variety of products and services related to air compressors, blowers and vacuums. Compressor rebuilds have been an important part of Comairco's business since day one, and they now offer a refurbishment service for your entire air booster package.

The air end is the heart of the air booster package, and the unique high-pressure rotary screw design (often by Sullair) demands special expertise for a rebuild or major repair. Comairco only allows their most experienced and well-trained technicians to rebuild these air ends, and only uses high-quality OEM parts. This ensures "like new" performance and durability for every air end and allows Comairco to stand behind their work with a two-year warranty.

The air end rebuild by Comairco includes replacement of all bearings, seals, gaskets and o-rings with new OEM parts. This complete rebuild service also includes sealing strip repairs, remanufacturing of bearing bores and air gaps, precision grinding of rotor faces and air

gap collars, machining of housings, gear fit repairs, repair of broken or cracked shafts, repair of broken housings and dynamic balancing of all rotating parts.

Going beyond the air end, Comairco inspects every component in the booster package for repair or replacement. The motor and electrical panels are refurbished; gauges, hoses and valves are repaired or replaced. To protect your investment the entire frame and sump tank are sandblasted and repainted, and new reflective safety decals are added. Before leaving the shop, Comairco tests the package for leak tightness and performance, and performs a full visual inspection.

This is also a great opportunity to add customizations or upgrades to meet your changing needs. Comairco can add stainless steel control panels, new air or electrical connections, instrumentation, safety devices and much more.

Comairco's refurbishment service can bring new life to your aging air booster packages for much less than the cost of a new booster. Their investment in personnel and facilities ensure prompt repair time at competitive pricing. Visit [www.comairco.ca](http://www.comairco.ca) to contact one of their 23 North American locations. ✕



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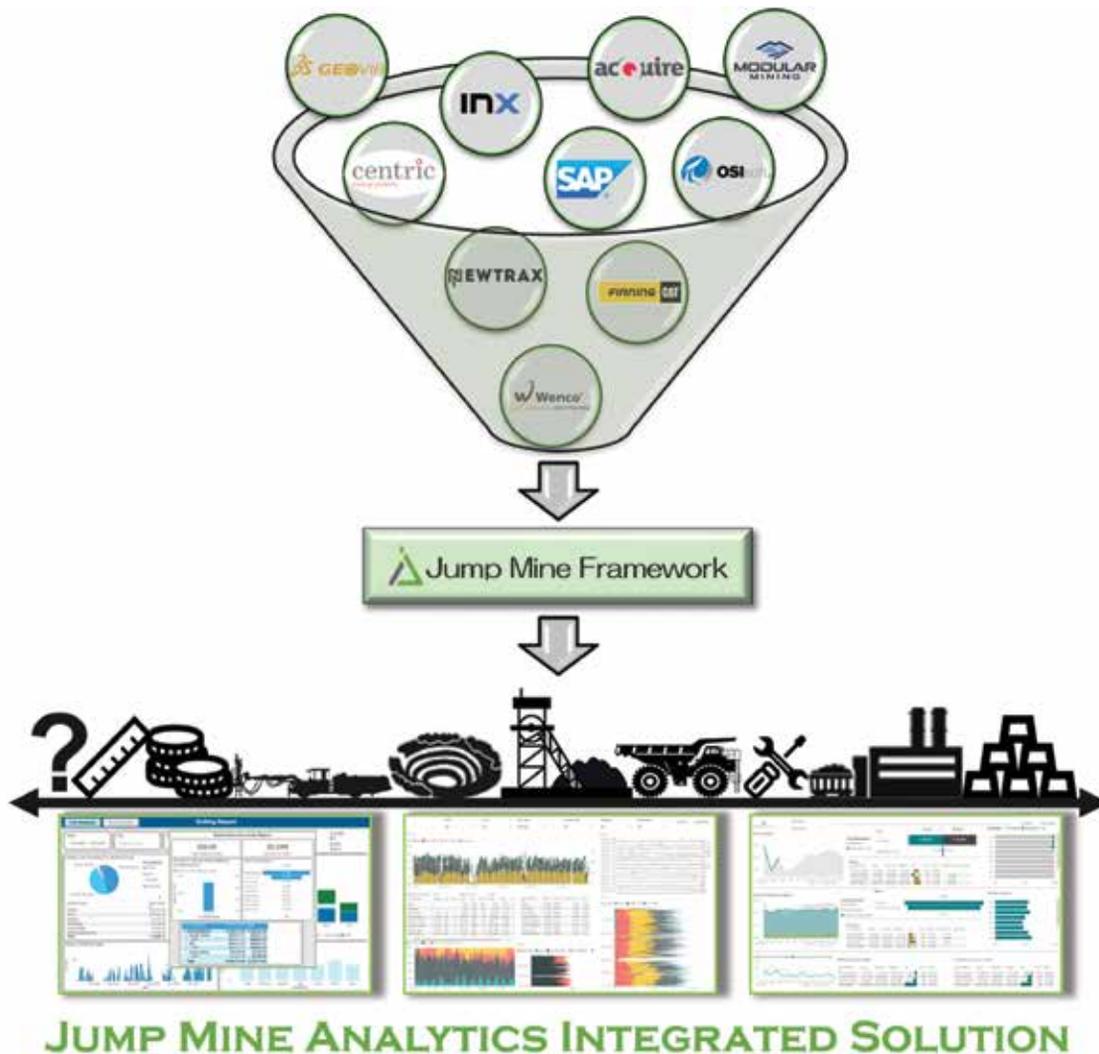
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# "FILL THE MILL"



## HOW EFFECTIVE ANALYTICS WILL DRIVE PRODUCTIVITY AND REDUCE COSTS

By Jeff Armstrong, Director of Strategic Industries, Jump Analytics



In an industry that is demanding, competitive and always evolving, mining companies need to maximize their production efficiency. To meet this objective, mine operators need to rely on the unbiased truths of accurate data to support and drive their decision-making.

The advanced applications of technology are allowing the industry to look at ways to drive automation and efficient

processes when it comes to data collection, data streaming and data analytics. However, many mining companies face challenges in pulling together data from the various systems used to run their mine sites. They often spend too much time performing manual data pulls and manual data reconciliations, leading to untimely and inaccurate reporting. This, in turn, can lead to inefficiencies and, worse, safety issues.

In order to optimize productivity and mitigate risks, companies must be able to access clean, accurate data from each area of their operations, consolidate and align views of that data, and present those views in timely, automated, and accurate reports. This adjustment allows companies to be proactive with their data rather than reactive.

Let's look at just one scenario faced by mining companies.

## PUTTING ANALYTICS TO WORK

In the world of mining, safety is priority No. 1. Period.

Next on the scale of importance, hitting your operational targets, is what drives the business forward. Setting your targets – yes, that’s the easy part – but knowing with certainty what affects your chances of hitting or exceeding your target can be challenging, given the unlimited variables interrelated to the target at hand. “Fill the Mill”, they say! OK, let’s go!

Let us assume the scenario of material movement. You added 10 per cent more capacity to the fleet, and they have been 100 per cent available for the past two weeks, but there’s barely been an increase in material moved. OK, by looking at the data for these haul trucks, it seems to show that the effective use of the fleet has gone down.

Having this data readily available will allow you to adjust, make the changes necessary, course correct and reach the overall objective of filling the mill. Simply adding to the fleet wasn’t the answer. Improving effective use – bingo! A data analytics solution like Jump Mine Analytics Framework will help bring this information to the forefront.

But wait, further upstream, the “Fill the Mill” initiative has stalled. Stockpiles are empty, and the equipment effectiveness is even worse than yours was. Had their initiative been shared and had their historical numbers been known and used in combination with material movement data, an action plan could have been developed with historical data from the two links in the chain, used for analysis, Fill the Mill would be a success with less chance of unforeseen bottlenecks.

What every organization needs is a tool that brings this and other data out of their respective hiding places and relates them in a governed, master data environment, where all can be used and understood at all levels. Jump Mine Analytics Framework provides this level of support. Eliminate the “telephone game”, lost-in-translation numbers that change

when passed from one hand to another.

The Jump solution offers a design and process to consolidate data from key mine systems into one place, allowing for final month-end adjustments to be melded with daily actuals and for financial forecasts to be used with physicals to fine-tune the economical feasibility in the weekly mine plans. Cumbersome spreadsheets and notepads, which have always been a single point of failure, riddled with user error, are replaced with data entry systems that integrate seam-

lessly with the framework, removing the risk that roaming spreadsheets pose.

Jump Mine Analytics Framework is the launching pad to the advanced analytics and the predictive analytics that make hitting your targets with accuracy the thing of consistency. Let us do the data mining, so you can focus on the mining that matters to you.

Visit <https://jumpanalytics.com/jump-mine-analytics-framework> to learn how Jump Analytics can help drive your organization’s productivity. ✖

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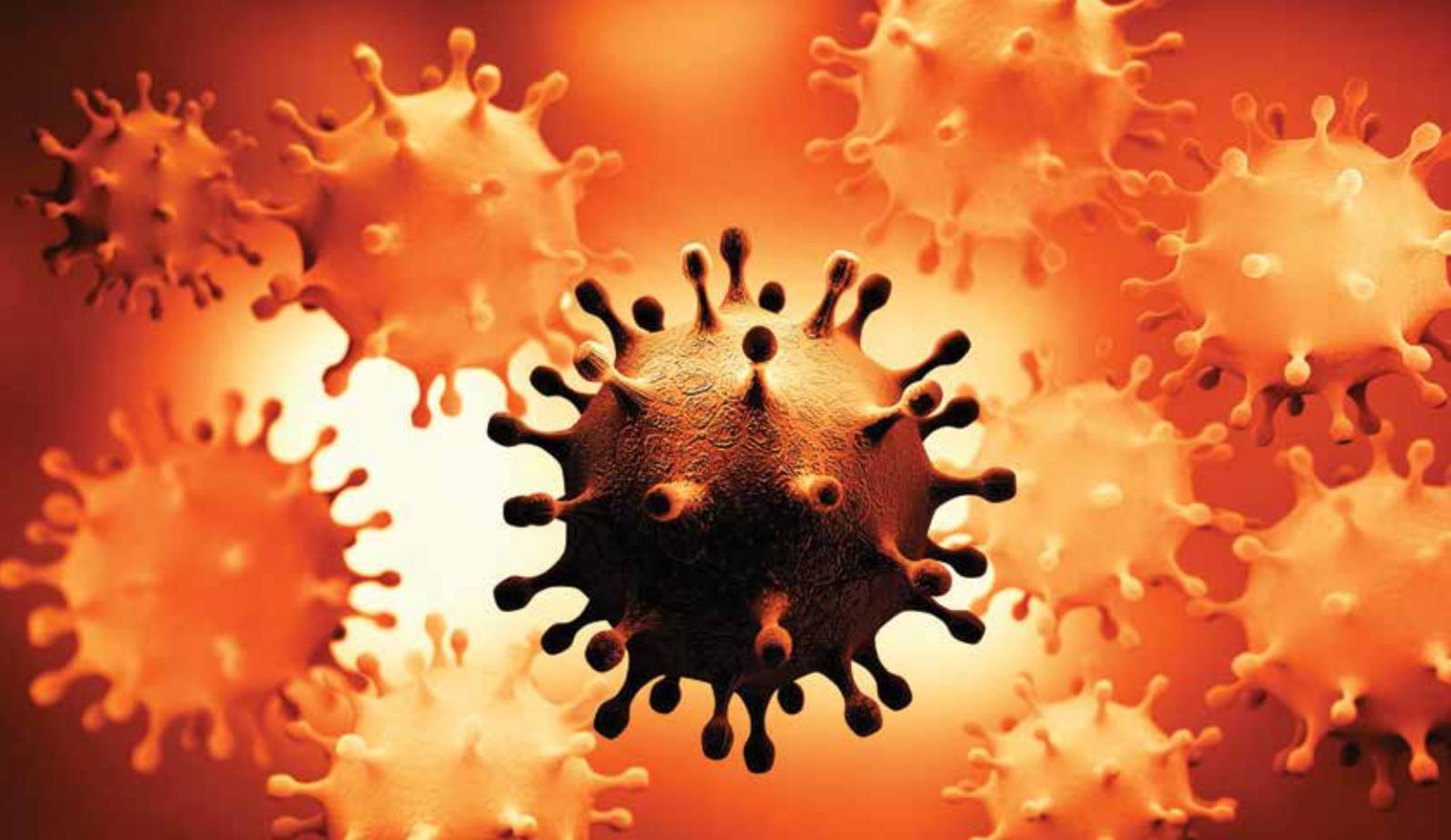
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# COVID-19 RELIEF FOR SASKATCHEWAN MINING COMPANIES

By Keely Cameron, Associate, Bennett Jones, Calgary,  
and Simon Foxcroft, Partner, Bennett Jones, Edmonton

**O**n June 12, 2020, the Government of Saskatchewan announced amendments to The Mineral Tenure Registry Regulations in response to the state of emergency declared on March 18, 2020, due to the COVID-19 pandemic. On June 18, 2020, the amendments passed third reading.

The amendments will grant relief to mining exploration companies by easing the expenditure requirements for holders of permits, claims, and leases. The amendments apply to companies engaged in the exploration of Crown minerals such as uranium, gold, copper, zinc, cobalt and rare earth elements in Saskatchewan, however, they do not apply to companies engaged in the exploration of other Crown minerals such as alkali minerals, oil and gas, coal, quarriable substances, or helium.

## WHAT ARE THE EXPENDITURE REQUIREMENTS?

Pursuant to sections 37, 44, and 53 of the regulations, the holder of a Crown mineral disposition by permit, claim, or lease must satisfy their respective expenditure requirements during

a given assessment work period. The particular expenditure requirements and duration of an assessment work period varies for permits, claims, and leases, and generally consists of a dollar amount per hectare per assessment work period, or a minimum dollar amount per claim or lease per assessment period. Assessment work that may contribute to satisfying expenditure requirements includes various exploration-related activities such as airborne or ground geophysical surveys, drilling and logging, geochemical surveys, geological surveys, prospecting, and trenching and stripping. If the holder of a claim or lease does not satisfy their respective expenditure requirements during a given assessment work period, they may make a non-refundable cash payment or pay a deficiency cash deposit to the Minister that is equivalent to the deficiency within 90 days after the end of the period in which the expenditure is required. Payment of a cash deficiency deposit provides the holder with the option to meet additional expenditure criteria in the subsequent assessment work period that may make them eligible for a partial or full refund of the deposit. Failure to comply with ex-

penditure or deposit requirements may result in the issuance of a penalty pursuant to section 25(2) of the Crown Minerals Act.

### THE NEW CHANGES

The amendments provide that:

- the Minister may waive the expenditure requirements for the work assessment period subsisting at the time of the declaration on March 18, 2020, and for the subsequent assessment work period with respect to the permit, claim or lease;
- any expenditures made with respect to a mineral disposition during the aforementioned relief period that is registered by the Minister may be applied toward any expenditure requirements of the regulations; and
- any holder that pays or has paid a deficiency cash deposit for the assessment work period immediately before March 18, 2020, may be eligible for a refund of the deposit.

### RELIEF IN OTHER JURISDICTIONS

These amendments follow measures taken in other Canadian jurisdictions since the World Health Organization declared COVID-19 a pandemic. In Alberta, on March 23, 2020, Alberta Energy published Information Letter 2020-09, which was later replaced by Information Letter 2020-21. The Information Letter provides that Alberta Energy is prepared to offer one-year extensions for petroleum and natural gas agreements, oil sands agreements and metallic and industrial mineral permits expiring from March 20, 2020, up to and including March 31, 2021, provided that extension applications are submitted to Alberta Energy prior to agreement expiry.

In British Columbia, on March 27, 2020, the Chief Gold Commissioner of British Columbia issued an order extending the time limits for various obligations of mining companies to December 31, 2021. This includes extending the period for registering a statement of exploration and development, registering payment instead of exploration and development, and registering a rental payment under the Mineral Tenure Act. The order also extended the time limits for making an application to extend the term of a coal licence and making a payment of rent for a coal lease under the Coal Act.

In Ontario, on April 17, 2020, the Ministry of Energy, Northern Development and Mines announced relief for claim holders. Claim holders with claim anniversary dates on or before December 31, 2020, may request via email no more than 30 days before the anniversary date for their claim and no later than the anniversary date for the issuance of an exclusion order removing the requirement to carry out assessment work for a period of up to 12 months in respect of the claim and any claims contiguous to the eligible claims. On August 19, 2020, the aforementioned relief was expanded to apply to all claim holders with anniversary dates on or before March 31, 2021.

### CONCLUSION

These new amendments, like the similar programs implemented by other jurisdictions, will assist in mitigating some of the hardships experienced by mining exploration companies due to the COVID-19 pandemic by providing more time to raise capital to meet the expenditure requirements and access the mineral disposition sites to carry out exploration activities. ✖

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# NORTHERN BUSINESSES DIVERSIFY AS MINING INDUSTRY SLOWS

By Sarah Jensen

**I**n Saskatchewan, few industries are as closely knit with the communities they operate in as uranium mining is in the north. Since Cameco began operating in northern Saskatchewan, more than 30 years ago, Indigenous inclusion and partnership with local communities has been a core value of the company. Local peoples benefit from resource development on and near their traditional lands through employment, training, business opportunities and environmental stewardship. Small, highly specialized businesses have grown from these opportunities to the benefit of both northern residents and mining operations.

These partnerships have been instrumental in providing job opportunities to remote communities and building far northern economies. However, with so much tied to one industry these same businesses and communities are extremely vulnerable to market fluctuations, structural changes, and — as we have recently witnessed — global health concerns which affect the industry. How are northern businesses surviving this slump?

Cameco and Orano had already reduced operations while commodity prices hit historical lows. Cameco permanently laid off 700 employees at its Key Lake and McArthur River mine sites in 2018 — suspensions that are still in place with no restart dates announced so far. This production hiatus and the incumbent job losses caused a shock wave of economic repercussions rippling through northern communities and businesses tied to the mining industry.

“The closure of Rabbit Lake, Key Lake and McArthur River and its attendant loss of revenue showed us quite graphically why Northern Resource Trucking has to diversify into other industries,” Northern Resource Trucking president Dave McIlmoyl explains.

Cameco’s move appears to be paying off, with 2020 bringing a 35-per cent surge in uranium prices and investors are looking eagerly for hints of a new bull market for the commodity which hasn’t been seen in over a decade.

Just as things should be looking up, northern communities,

mining companies and the specialized businesses operating alongside them have hit another wall.

The coronavirus pandemic has brought mining operations in northern Saskatchewan to a standstill. Cameco and Orano took early, decisive action — northern communities are especially at risk of COVID-19 — sending workers home and keeping on only a bare minimum maintenance staff to care for each site.

For the specialized businesses, which developed in concert with the needs of the uranium industry, these kinds of upsets to the economy have been devastating.

“The most recent closure of Cigar Lake and McClean Lake due to the COVID-19 pandemic highlights our vulnerability,” McIlmoyl says.

Some businesses, like Northern Resource Trucking, are making the most of a bad situation by using the economic slowdown as an opportunity to expand and diversify. Many northern businesses are adapting the specialized skills and services they learned providing service to Cameco and Orano to other sectors of the Canadian economy.

Northern Resource Trucking has expanded its operations east, developing partnerships with First Nations in Manitoba and Ontario.

“By taking our skill set, our people and our equipment, we can go to other mines, in other geographic locations, and broaden our base of customers so that in the future we aren’t so dependent on one industry,” McIlmoyl says. “In these uncertain time, expanding and diversifying our company has been absolutely critical for NRT’s survival.”

When health fears have eased and uranium prices recover from their decades long slump, Northern Resource Trucking is one business that will still be up and running to service the needs of the mining industry. The companies that survive will be stronger for their ability to adapt and diversify in challenging times, and this will be a very good thing for the north. ✘

# TRAINING = OPPORTUNITY

## 2020 wilderness safety training

By Craig Cowper, Operations Co-ordinator, Northern Manitoba Mining Academy



Group photo, chainsaw training



Rita Ducharme, wilderness safety student during chainsaw training

It takes a certain skillset to live and work in the north. In late 2019, the Pukatawagan Development Corporation approached the University College of the North (UCN) to provide wilderness safety and chainsaw training for members of the Mathias Colomb Cree Nation. Through discussion and co-ordination with the Manitoba Department of Economic Development and Training, it was determined that sponsorship from the Skills and Employment Partnerships Branch would provide an excellent opportunity for the community.

The Northern Manitoba Mining Academy (NMMA), a division of UCN, offered the Wilderness Safety Certificate Program.

“There were 14 students enrolled in the program and this was the first time that we had a 100-per cent success completion rate,” says experienced instructor Warren Heidman. He noted how this is a testament to the enthusiasm and dedication of the students, as well as the support from friends, family and the entire community.

The class, comprised of 11 men and three women, began a four-week essen-

tial skills program, facilitated by Workplace Education Manitoba. The focus of the training was to develop the learners’ skill level in the following areas: numeracy, document use, reading and writing.

Instructor Walter Marlow explains, “It was beneficial that the training took place in their home community. The students were focused and actively participated in all aspects of the training, which helped them transition into the more technically challenging wilderness safety components.”

Providing employable skills to northern communities leads to increased economic development. Many of the class participants have experience living in the north but integrating knowledge of safety and survival skills can lead to additional employment opportunities, both within and outside of the community.

“One student was reluctant to use the chainsaw for the first time,” says Heidman. “However, by the end of the training, you couldn’t take the chainsaw away from her.”

Heidman adds, “Many of the students have good navigation skills around their home community, even though most

have never seen or used a compass or GPS. However, once they learned how to use these tools, it increased their confidence and ability to find work outside of their home community.”

This program is designed to provide the students with basic safety, survival and navigational skills, along with theoretical, technical and practical skills required to participate in the mineral exploration and natural resources industries of Manitoba. The result is to make participants employable in this market. ✘



Instructor Warren Heidman with wilderness survival students



# PUTTING CRISIS TO WORK

By Eric Anderson, Executive Director of SIMSA

**T**he Saskatchewan Industrial and Mining Suppliers Association's (SIMSA) unexpectedly grew in membership through COVID-19, gained some skills, evolved and learned a lot about ourselves, friends and members.

We saw an accelerated work schedule with higher stress levels. Why? We went from one video conference directly into another video conference without some driving/down time between them allowing us to just think for a bit, so there was no decompression time between meetings. And with video conferencing becoming acceptable, meeting schedules became more tightly packed. With all duties focused on formulating rather than networking, and news being released and items updated hourly, the number of planning meetings and meeting frequency itself exploded.

Simultaneously, our members' and other businesses were thrown into a range of issues stretching from shut-downs, to slow-downs, to upside-downs.

Yet, a lot of good came out of this.

We saw a society being isolated and forced to pause because of social distancing, which then allowed them to realize that they are vulnerable to outside forces. This kicked off a series of events which accelerated thoughts on social issues and things like environmental, social and governance (ESG).

All of this forced SIMSA to pivot from being a procurement-focused or-

ganization – focusing on events with the procurement staff of major resource companies – to a government lobbying/information-conduit group and news hub. Historically, this shift of focus would have made us somewhat like other associations – something we avoided, as we focused on procurement – but it was necessary, so we did it, just better.

This change was possible and it worked in an overnight-change scenario, since our strategic plan worked. The plan focused on our character and our long-term vision first, so our destination did not change; only our route did. And this new route allowed us to pick up some new skills along the way.

SIMSA consciously became a news hub – sending market and government policy information to its members as “SIMSA updates” often several times per day. This “news” had value as it was sent immediately upon release by doing a constant sweeping of credible news sources, siting the primary source, then vetting for relevance and adding context. But the key was to be first out with the news. Our members began to look for our updates.

SIMSA's staff also shifted into the role of constantly calling its members to see how they were doing and to find out what questions they needed answered. These questions drove the direction of the information hunt and allowed us to provide all of them with valuable information. We also fed this informa-

tion back to government and the major resource producers, as the crisis proved that they actually do care about the health and welfare of the supply chain. This feedback helped them draft plans and policies.

SIMSA's executive director scheduled at least weekly calls with Nutrien – our members' largest client – to gather updates and provide SIMSA-member needs. Nutrien and SIMSA worked together to help each other, as an example, by seeing what capacity was available in the supply chain, then moving projects forward to use this capacity and thus retain stability in the supply chain. Nutrien also provided technical support in the area of virtual conferencing.

There were frequent calls with other resource producers such as BHP, who were looking to procure items to support the communities they work within and to support SIMSA's membership through things like accelerated payments.

A minimum of weekly calls was also scheduled with three levels of the Saskatchewan Government, to assist in developing relief programs as well as their rollout.

SIMSA also began collaborative work with the Mining Suppliers Trade Association of Canada, the Canadian Mining Innovation Council, the Mining Suppliers Association of B.C., Mine Connect, COREM and the International Minerals Innovation Institute. We initially met to

see how we could support each other during the pandemic, only to discover that we had commonalities worth pursuing for the long term.

One of SIMSA's members – Kelly Panteluk Construction – called to ask about donating funds to the food bank and working with others. Almost instantly, a group was pulled together to work on a large fundraising initiative for the Food Banks of Saskatchewan, consisting of Nutrien, the Saskatchewan Construction Association, the Saskatchewan Heavy Construction Association and Merit Saskatchewan.

We also learned who our friends truly are – those that called to see how they could help or worked with us, and then those who did not.

And finally, SIMSA pivoted to delivering virtual procurement sessions – a set of skills and systems that we will be able to use to expand our reach in the future, once in-person meetings resume.

All of this collaboration and evolution was in our “core values” – the first box in

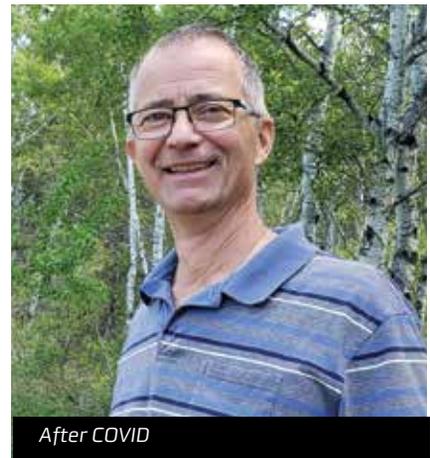
our strategic plan. Our core values noted that SIMSA is guided by its beliefs of “collaboration in all our actions” and that “wisdom and being proactive in our decisions, through considering the interactions between our membership’s capabilities and needs, with their customers’ realities” adds value to our association.

In short, all of these new skills, systems, relationships and knowledge banks are now being absorbed into SIMSA's toolbox for future use. The crisis

gave us the time, inspiration and opportunity to grow. But that is what a crisis is supposed to do – the word comes from the Greek word “Krino” which means to shift, shake out excess, decide, judge, etc.

Working from home has its perks. We also learned a lot about our contacts’ homes, children and pets during video calls, and that a brush-cut is better than a greying and receding hairline.

In the end, rather than wasting a good crisis, we put it to work (by accident). ✘



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# APPLICATIONS OPEN FOR TARGETED MINERAL EXPLORATION INCENTIVE

By Erin Eccleston, MLT Aikins LLP

**O**n June 23, 2020, the government of Saskatchewan announced the opening of the application window for the Targeted Mineral Exploration Incentive (“TMEI”) program for 2020/21. As part of the Saskatchewan Mineral Development Strategy, the TMEI offers eligible mineral exploration companies a 25-per cent rebate on approved direct drilling costs up to a maximum of \$50,000 per fiscal year.

The TMEI is intended to promote new discoveries. It is available to mineral exploration companies that undertake drilling for base metals, precious metals, or diamonds on mineral dispositions. Companies drilling on mining leases are not eligible.

## ELIGIBILITY

Eligible applicants include:

- A holder of a Saskatchewan mineral claim that is registered in accordance with The Mineral Tenure Registry Regulations and in good standing; and
- A person or company authorized to act as a designate by an eligible holder as per The Targeted Mineral Incentive (TMEI) Regulations.

Projects must be in the defined geographic region in Saskatchewan (“TMEI area”). The TMEI area includes existing mining and mineral processing operations in the Creighton-Flin Flon area. The government of Saskatchewan notes that the area was selected because of its proximity to existing infrastructure and because of its high potential for the target commodities.

Eligible expenses are those associated with direct drilling costs and incurred by the applicant between April 1, 2020 and March 31, 2021. Eligible expenses include, but are not limited to, the following:

- Drilling, including but not limited to casing, cementing, testing, reaming, wedging and orientation;
- Labour, including but not limited to site preparation, skid work, cat work, sump maintenance and foreman;
- Travel and transportation costs of personnel, equipment and supplies used in the work with respect to the approved application to a maximum of 40 per cent of the total cost of the approved application;

- Equipment and consumables, including but not limited to rentals, drill steel, muds, lubricants, fuel and helicopters;
- Other items, such as moves between drill sites and stand-by;
- Any other approved direct drilling expenditure approved by the Minister.

The deadline for applications is December 31, 2020 and the overall funding level for the TMEI program will be established annually to a maximum of \$750,000 per year.

MLT Aikins has significant experience advising clients in the mining and natural resource industry. Our lawyers in this practice area would be pleased to further discuss eligibility and details of the TMEI program. ✕

## ABOUT

Erin Eccleston maintains a commercial law practice focused on financing, leasing and purchase/sale of commercial real estate. She also has experience in the resource sector, assisting companies with land transactions and regulatory compliance.

*Republished from the MLT Aikins website.*





# THERMAL BLANKETS – OPTIMAL SOLUTION TO AVOID COLOSSAL EQUIPMENT DAMAGE COSTS

By Kevin Mailey, Garry Mailey and Ralph Deayton

**S**afe operation of equipment at mining sites is paramount for everyone. With equipment working at full capacity and the need to keep the uptime, maintenance and prevention play a big part of being safe and keeping the production happening.

We all know that equipment fires are a real concern that can put our staff into dangerous situations. The high temperatures, flammable liquids, and the use of combustible materials all combined together, make it easier for fires to break out and spread fast. Another risk to safety and productivity are freeze ups in sub-zero temperatures.

To both of these risks there is a safe and affordable solutions – thermal covers and removable shields.

Here are some potentially hazardous areas to identify on equipment:

**Flammable Liquids** – Petrol, diesel, alcohol and many solvents degreasers are usually used in industries whose leaks can lead to severe destruction.

**Different Ignition Sources** – Most importantly, heat engines, exhaust systems, turbochargers, electrically energized equipment, overheated cables and chemical reactions can cause





irreversible damages to equipment, leading to expensive repair.

**Combustible Metals** – Metals, like aluminum, magnesium, lithium and potassium, can catch fire under high temperatures.

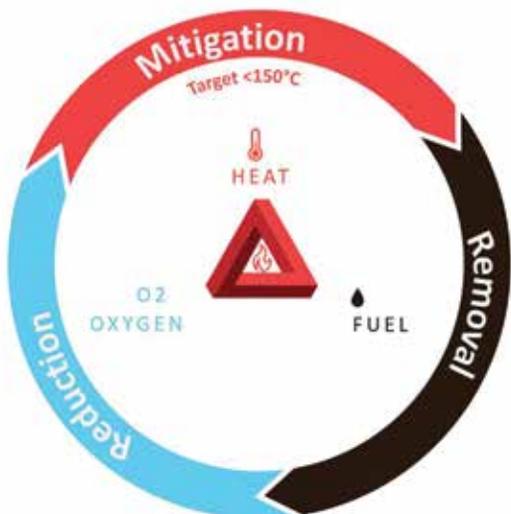
**Carbonaceous Solids** – These materials are often the cause of a ferocious fire on equipment. Some of the items classified into carbonaceous solids include coal dust, rags, timber, textiles, plastic, rubber and paper.

Although there are many hazardous materials and potential ignition sources on equipment, this equipment is essential to running the operation. However, the equipment operators can invest in an optimal solution to prevent fires as well as freeze-ups under the worst of circumstances, and that solution is ‘thermal blankets.’

### MAMMOTH'S THERMAL EXHAUST BLANKETS

The Mammoth's thermal exhaust blankets are an excellent option for mitigating potential fire risk while also preventing freeze-ups, eliminating the risk factors that can damage industrial equipment.

Here are a few ways thermal blankets can offer an edge to industries working under strict conditions:



**Mitigation:** Installation of thermal exhaust blankets are essential for your industrial equipment as they can withstand temperature up to 1,200°, protecting your workers from potential thermal injuries and giving your fire mitigation on your equipment.

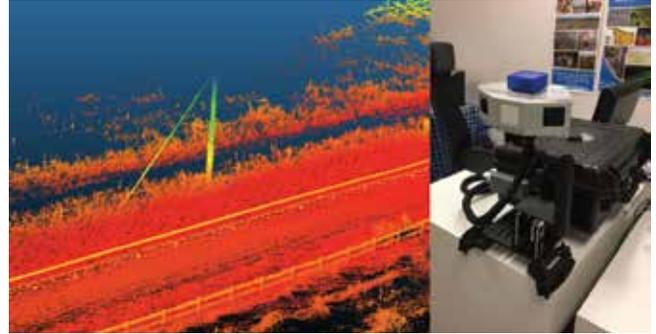
**Removal:** Hot exhaust systems can be the cause of destruction when a leaking pipe and engine oil comes in contact with the searing systems surface. However, the fabrics used in Mammoth's thermal exhaust blankets prevents liquid absorption, therefore removing this element of risk as step two of The Mammoth Method to preventing equipment fire.

**Reduction:** Both freezing and hot temperatures can be damaging for the different materials used in industrial equipment. However, thermal blankets are abrasion-proof, so they significantly reduce any potential equipment damage from wearing and tearing and allowing oxygen to feed any potential fire risk.

Thermal exhaust blankets become a worthwhile investment, saving any industry running equipment a considerable amount of money by eliminating the costs of replacing damaged equipment parts. Simply put, these thermal blankets are the ultimate solution to avoid colossal equipment damages in the long run. ✖

# WESTERN HERITAGE CELEBRATES 30TH ANNIVERSARY

By Jim Finnigan



**W**estern Heritage (Western) was founded 30 years ago by a team of cultural heritage management experts from the Saskatchewan Research Council. Western's current services can be grouped into 1) cultural heritage management services, which include archaeology and community engagement; 2) mapping and monitoring services, which use information derived from satellites and UAVs; and 3) asset management services, which use GIS, UAVs, satellites and other technology to monitor assets such as roads, power lines and pipelines. To an increasing extent, artificial intelligence is integrated into each of our products and services.

Western's newest product is a vehicle-based LiDAR system, which has been ruggedized for the mining industry. This allows you to map the roads and surrounding infrastructure at driving speed. There are no moving parts in this lidar system (other than the vehicle).

Western's newest service line uses UAVs for asset management. Staff has advanced UAV licenses with Transport Canada

and a BVLOS certificate for beyond line of site operations. The sensors used optical, thermal or LiDAR sensor, depending on the customer's needs. Our value lies in analyzing the collected data and flagging anomalies such as potential hotspots, leaks or even damaged insulators.

Western has delivered services in a half dozen provinces and countries. We have provided cultural heritage services for mining companies have been delivered from British Columbia to Ontario and in Chile. Services include heritage overviews, community engagement, archaeological surveys and excavations and assessing overall cultural heritage risk.

The last 30 years have seen continuous growth and innovation. The next 30 years – flying cars? – will see deeper integration of Western's tools into the frameworks of the digital mine, and, with the continued growth of earth observation satellites, the ability to monitor more aspects of the environment. Social engagement will continue to grow in importance and our cultural heritage risk management services will expand. ✘



# RECOGNITION OF BEST PRACTICES IN MINERAL EXPLORATION WITH ECOLOGO

By Valérie Fillion, Executive Director

**T**he application of the best social, environmental and economic practices of mineral exploration companies and their service providers is now confirmed by the ECOLOGO certification, a program of Underwriters Laboratories (UL). Supported by the industry, this certification takes into account the interests and concerns of the industry's stakeholders.

"The implementation of a certification program in mineral exploration adds value to the development of our companies. The application of best practices is essential to ensure the success of a project. The data collected during the certification process meets the requirements of investors and project partners in terms of responsible practices," states Mathieu Savard, chairman of the board of directors of the Québec Mineral Exploration Association (QMEA).

To encourage companies' adherence to the certification process, the QMEA created a coaching program and developed a web platform. For each company

adhering to ECOLOGO, the association provides personalized assistance allowing optimal preparation for the external and independent audit carried out by UL. The policies, procedures and documentation necessary to comply with the standard's requirements are developed and gathered using the CORE web platform ([www.coreplatform.ca](http://www.coreplatform.ca)), a management tool designed according to companies' business logic. Upon completion of the audit, additional support is provided to assist companies in the ongoing management of their accreditation.

"We are proud to have developed a personalized and efficient support service based on our members' needs. Our coaching program reduces the learning curve and ensures better cost control. We note that the resources provided allow companies to progress effectively in the certification process and to quickly benefit from its advantages," says Valérie Fillion, executive director of the association.

Certified companies already benefit

from numerous positive impacts related to their ECOLOGO accreditation. In addition to the recognition of their best sustainable development practices, their adherence to the program promotes access to financing, improved work climate and employee motivation, attractiveness as an employer, strategic planning and risk management. In addition, certified companies are better prepared in the event of legislative changes and benefit from better relations with the various stakeholders, thereby contributing to the social acceptability of projects and reduction of delays.

Today, 20 companies have started the process leading to ECOLOGO accreditation. Four are officially certified and more are currently being evaluated by UL. When the certification becomes available in other Canadian provinces, the QMEA's coaching program will be deployed in collaboration with other Canadian associations, thereby promoting the widespread application of best practices nationally. ✖

# I CHOOSE.

## ECOLOGO CERTIFICATION FOR MINERAL EXPLORATION



# WHY YOUR BUSINESS NEEDS CLOUD BACKUP

By SaskTel Business Solutions



**F**rom banks to restaurants and everything in between, businesses look to Cloud Backup for peace of mind that their data is safe and secure.

Demystifying the cloud has become a common expression and no one does it better than Karen Purdy. She's the Marketing Manager for Data Centre and IT Managed Services at SaskTel.

According to Purdy, you need to know a bit of history first. In the past, companies would invest in creating their own server infrastructures—their own little mini data centres—and in order to do that, they made significant investments in cooling, power, and a safe space for equipment that's secure.

"The notion of cloud is you're not going to do that yourself," says Purdy. "You're going to use another company's infrastructure and data centre. I think when a lot of people think about the cloud, they think of Microsoft Azure, AWS and Google, but SaskTel should be included in that list since we have our own cloud that our customers can use."

Cloud Backup is simply a service that backs up your data to the SaskTel Data Centre. It's a very affordable way to take care of your environment and know it's being backed up once a day. It's a great entry-level product for a company that doesn't want to do it themselves.

"We have a customer in Saskatchewan, a bank that every night would copy whatever files they needed and back them up on a USB stick. Then, they would go down the street to another bank and put it in their safety deposit box," says Purdy. "Cloud Backup is great for them. We set it up, we manage it, we fix any problems, and they never have to worry about it again."

SaskTel has extremely knowledgeable technical resources that are available to customers if they ever need any kind

of help. The company actually has people who will walk you through it, whatever you need.

"Another thing is we understand the customer's environment," adds Purdy. "We know what's in there because we set it up, we monitor it, we watch it, and we have hundreds of servers that we do this for every day. Some of those other cloud providers are huge, but they aren't local. And do they really care about your data environment? We do."

Perhaps that's why, when people take a tour of our Tier III Data Centre, they will often say, "Why would I do this myself? Do it for me. I'll gladly pay you for it if I never have to worry about it again." ✕



# DUMAS CONTRACTING LTD.

## YOUR PROJECT, OUR EXPERTISE, COMMON GROUND

By Cameron Carter, P.Eng



**F**ounded in Timmins, Ontario in 1994, Dumas Contracting Ltd. has grown to become Canada's leading full-service underground mining contractor, providing concept

to completion services to our clients throughout the Americas.

We are solutions-focused specialists with a proven track record of delivering successful large-scale projects. Our

core services shaft sinking, mine development, underground construction and engineering.

Dumas focuses on providing value-added end-to-end services for our clients. We pride ourselves in being experts in underground project execution. Our core team of inventive engineers and operational management are continually developing innovative solutions to challenging projects. Our "one-team" solutions-focused approach with our client partners promotes true partnership and collaboration resulting in unrivalled client-contractor success.

Our projects have taken us from the depths of the Canadian Shield to the heights of the Peruvian Andes. Your Project, Our Expertise, Common Ground is not merely just our tagline; it represents Dumas' commitment to develop and sustain mutually beneficial, socially responsible long-term relationships with our clients and industry partners.

Having operated continuously in Manitoba and Saskatchewan for the past decade, we are incredibly proud of the relationships that we continue to develop with our clients and regional partners. These partnerships support Dumas' vision of becoming a leader in the mining industry with respect to human resource development, equity towards our multicultural workforce and respect for the communities and environments in which we work. Underpinning our success is the commitment and expertise of our greatest asset: our people. ✖

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# TEMPERATURE DETECTION CAMERAS FOR EMPLOYEE/VISITOR TEMPERATURE SCREENING



## Quickly determine if someone has a high temperature

By Karly Winfield, Technical Sales Consultant, PROVIX

The Provox COVID Camera is equipped with an infrared camera and a built-in body temperature detection module, which can rapidly determine a person's temperature when they stand in front of the camera. The COVID Camera can also authenticate an individual with facial recognition software if an existing photo database exists. The COVID Camera ships with the software and a mounting stand.



This is being used at mine sites (as well as many other industries) as a pre-screening method to scan every person's temperature that goes through security. It is a proactive method of scanning people's temperatures. This is now in use by over 30 different mining companies and actively in use at over 100 different mine sites.

It is in use at McEwen Mining, Kirkland Lake Gold, Detour Gold, Vale, KGHM, Alamos Gold, Asarco, Freeport McMoran, Rosebel Gold Mines, IAM-GOLD, Compass Minerals, Debeers, Diavik, Mosaic, IOC, Orano Canada, Mosaic, USG, Vistra Energy, Glencore, McEwen Mining, Oerlikon Metco, Westmoreland Coal, South32, Cameco, Boart Longyear, Cementation, Norcat, Dyno Nobel, Kiewit, Hudbay Minerals, Sherritt and more. ✕



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# RETHINKING GLOVES: HOW ONE COMPANY IS MAKING A DIFFERENCE

By Michele Moore

**T**he COVID-19 pandemic has disrupted the world in almost every way, and many businesses are just treading water, hoping to survive, but the fact remains that dealing with our pollution and waste must be front of mind as we move forward. We can make choices that are better for our environmental footprint; we just need to know that there are other options available and often they aren't any more expensive.

Innovative technologies are enabling us to change the way we manufacture items, and this includes gloves. One such change is including organic additives to the nitrile while disposable gloves are being made. After the worker is finished using the gloves and they are disposed of, they will start to biodegrade when they are in landfill conditions. Instead of 200 years, gloves with the additive will biodegrade into biogas in approximately 10 years (ASTM D5526). The increase in usage of disposable gloves during the pandemic is unprecedented and now, more than ever, we need to take into account the sheer volume of garbage this is creating. Using products that naturally biodegrade in landfill conditions in shorter periods of time only makes sense. This is a choice we can make to reduce our environmental impact.

Another way to lessen our footprint is to use recycled materials wherever possible in the manufacturing process. One type of recycled material you can now source is yarn. Plastic bottles can, believe it or not, be made into yarn and reusing them is top

priority as over a million plastic bottles are sold every minute. The process goes like this: first, the bottles are broken down into small flakes. Those flakes are then melted down into tiny pellets. Then, the chips are melted again, and filtered and spun into threads through a process that resembles water flowing through a showerhead. Depending on how the threads are treated, they can be used for a range of textiles, from swimwear to car seats to yarn for gloves. Progressive companies, like Watson Gloves with their head office in B.C., have sourced these WasteNot™ yarns and now uses them in their manufacturing process.

Watson Gloves is excited to announce more eco-conscious hand protection will soon be coming to the market. Another type of yarn that will biodegrade in landfill conditions in approximately five years will be used in new glove styles debuting spring 2021. This is different that the WasteNot™ yarn made from plastic bottles. This yarn will biodegrade into biogas, which is then converted to energy for many uses, such as heating homes. In addition, eco-conscious biodegradable nitrile coating engineered with Reclaim™ technology makes these new gloves true environmental winners as now the both the yarn and nitrile will biodegrade. Innovation is the key to reducing our waste and by searching out new technologies and options it's good to know we can all make a difference. ✕



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# VOYAGEUR MINERAL EXPLORERS INC.

By Brian Howlett

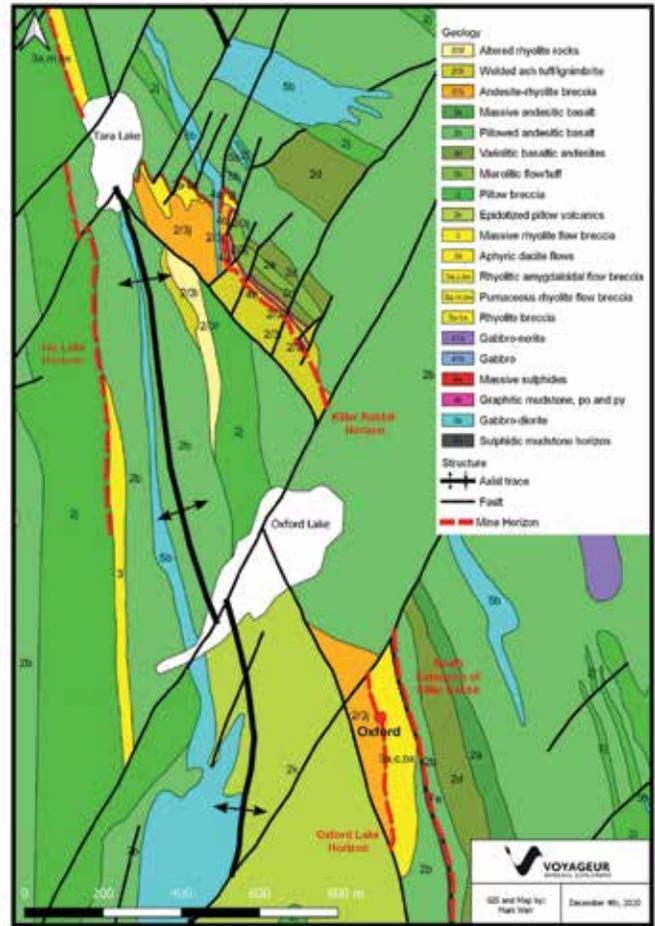
## TARGETING OPPORTUNITIES IN THE FLIN FLON CAMP

2020 represents a rebirth and rebranding year for Copper Reef Mining Corporation. With a new backing, a new share structure and a new name, Voyageur is poised to move ahead with an aggressive exploration program planned for 2021 and beyond. Voyageur has one of the largest claim packages in the Flin Flon-Snow Lake District in both Manitoba and Saskatchewan containing approximately 21,000 hectares; prospective for both VMS-style Cu-Zn-Au-Ag deposits as well as Au-Ag resources. In the 2021 drill program, the Company will be focusing the bulk of its efforts on the Big Island East Property where 2020 drilling and geological compilation has recognized further potential at the Tara Prospect. Map 1 shows the majority of Voyageur's properties.

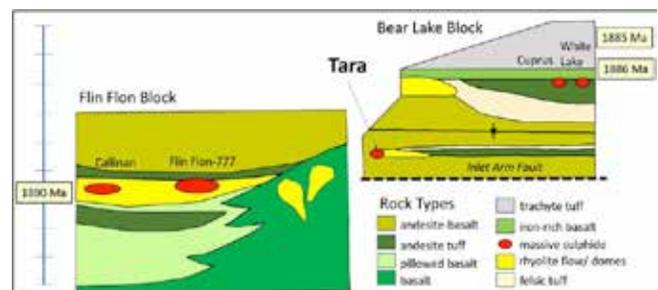
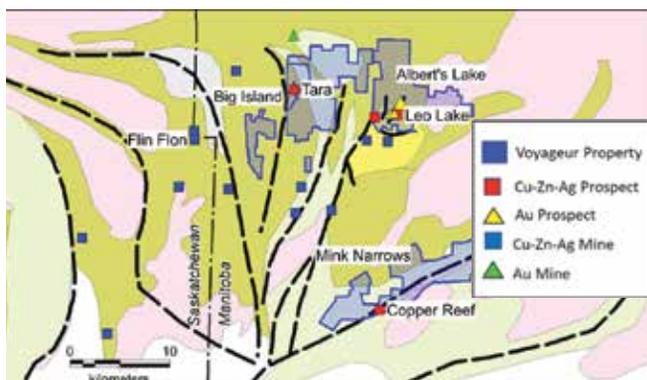
## BIG ISLAND EAST PROPERTY (TARA)

The Big Island East property lies approximately 12 kilometres east of the Flin Flon-777-Callinan series of mines. The property is part of several blocks of claims actively being explored for both Cu-Zn-Au and Au-Ag resources. Voyageur completed a drilling program in winter-spring of 2020 that included holes targeting the Tara Cu-Zn-Au-Ag Prospect. Results from the drilling were positive prompting a detailed review of the area to determine follow-up exploration work.

The Big Island Property occurs in the Bear Lake structural block comparable to the Flin Flon block hosting the giant Flin Flon-777-Callinan deposits. Massive sulphide Cu-Zn-Au-Ag mineralization within the Bear Lake block occurs at the Cuprus and the White Lake deposits in a volcanic sequence stratigraphically above the Flin Flon host rock horizons. The Bear Lake block volcanic sequence is dominated by a relatively thick sequence of andesite to basalt lava flows and sills that is directly comparable to rocks in the Flin Flon-777-Callinan hanging-wall. Felsic volcanic rocks occur throughout the Bear Lake block and have been the focus of exploration for Cu-Zn-Au-Ag resources particularly in the Tara Lake and Oxford Lake areas.



The Tara Cu-Zn-Au-Ag massive sulphide mineralized zone is hosted by felsic volcanics considered to be lower in the Bear Lake block sequence than the Cuprus-White Lake mineralized horizon. Age dating of the Tara area rocks has not been attempted, so a direct comparison to the Flin Flon felsic volcanics is tenuous. Felsic volcanic rocks in the Tara region have been mapped at surface over a two square kilometre area that likely represent a distinct volcanic eruptive centre that at this time has not been well defined, but will be the focus of future work to determine the potential size of the system and further prospectivity of mineralization.



Schematic cross-sections through the Flin Flon and Bear Lake structural blocks showing the stratigraphic position of massive sulphide mineralization. Published age dates of individual units are highlighted in yellow (after Syme and Bailes, 1993; Galley et al., 2009).

HOLE-ID	From (m)	To(m)	Width (m)	Cu (%)	Zn (%)	Au (g/t)	Ag (g/t)	Stratigraphy
TZ20-07	57.0	77.9	20.9	0.77	17.18	4.40	109.2	Tara Main
including	61.5	68.5	7.0	1.45	19.58	4.86	178.0	
TZ20-07	40.6	46.6	6.0	1.16	0.68	0.85	34.6	Tara FW
TZ-413-88-16	54.1	63.5	9.6	0.78	10.45	2.82	46.8	Tara Main
including	54.1	56.6	2.7	1.95	22.70	6.36	100.0	
TZ-413-88-16	108.8	113.3	4.5	0.75	1.36	0.52	14.4	Distal
TZ-413-88-16	228.9	232.5	3.6	0.12	0.32	0.41	3.5	Distal
TZ-413-88-39	141.9	152.9	11.0	0.04	0.92	0.07	3.6	Distal
TZ-413-87-10	142.0	148.0	7.0	0.13	0.91	0.11	2.8	Tara South

Table of drilling results representative of mineralization throughout the Tara area.

Massive sulphide mineralization occurs at surface at the Tara Prospect that was trenched and drilled between 1987 and 1988. Mineralization is particularly Zn-rich and drill holes near the exposures reported intersections up to 12.4 metres of 22.44 per cent Zn, 0.58 per cent Cu and 85 g/t Ag. Massive sulphide mineralization is also particularly gold rich with the highest-grade gold returned from this drilling program near the exposures grading 46.9 g/t Au along with 180 g/t Ag, 6.34 per cent Zn and 1.29 per cent Cu over 0.45 metres. Subsequent drilling targeted extensions to mineralization intersecting variably altered volcanic rocks and sparse zinc-enriched mineralization that also included anomalous silver and gold over a wide area.

In addition to the exposures at Tara, similarly altered and weakly mineralized felsic volcanic rocks are found in outcrop 300 metres south that are interpreted as a fault offset equivalent. Alternatively, these rocks to the south maybe a repetition of the host sequence considering the nature of folding at the Tara exposures.

Altered and weakly mineralized felsic volcanic rocks also occur further south of Oxford Lake where previous sporadic drilling has intersected Zn mineralization. Airborne electromagnetic conductors have been identified in a survey flown by Voyageur in this area at Oxford that may have not been well tested by the previous diamond drilling programs.



Drill core photos from 2020 Voyageur drilling. Left photo: massive sphalerite and pyrite.



Right photo: chalcopyrite-pyrite stringers in intensely chlorite-sericite alteration of the host felsic volcanic rocks.



Left photo: exposures of massive sulphide mineralization and altered felsic volcanics at the Main Tara showing (looking west).



Right photo: altered and rusty coloured pyrite mineralization in felsic volcanic rocks at Tara South.

Voyageur's 2020 drilling revealed the Tara mineralization and wallrock mineralization is similar to that found throughout the Flin Flon district where deformation can be complicated. Folding of the massive sulphide horizon and the host felsic volcanic rocks is pronounced at the surface exposures such that many of the previous drill holes did not test the extension of mineralization to depth below 150 metres from surface. The footwall alteration to mineralization exposed at surface is intense consisting of chlorite and sericite. Compilation of previous exploration work and re-interpretation of the stratigraphy has placed drilling results into a geological context comparable to the Flin Flon deposit model.

The Voyageur drilling results in 2020 have re-vitalized interest in the Tara Prospect as well as the surrounding area within the Big Island East property. The zinc-rich nature of mineralization at Tara compared to the Flin Flon deposits suggests this maybe the distal expression of a larger hydrothermal system nearby. Copper-rich mineralization may occur at depth and will be targeted using an integrated geological approach. The exposures at Tara reveal locally well-developed folding that has not been recognized elsewhere since most mapping in the Bear Lake structural block has been at regional scale. As such, the outlook for further Cu-Zn-Au-Ag mineralization within the Big Island East Property remains encouraging. ✖



CSE : VOY

*Focused on advancing its mineral properties within the Flin Flon-Snow Lake Greenstone Belt*



**Voyageur** has assembled a portfolio of high-quality copper-gold-zinc deposits in world class geological terranes. The Company also holds a portfolio of royalties on several exploration properties and one PEA stage project.

Voyageur is excited to embark on this next phase in the Company's evolution, focused on highlighting the attractive mineral content of its land position, and advancing the gold potential within a number of its projects in the near term.

### Share Price & Structure

Share Price <sup>1</sup>	\$0.30
Issued & Outstanding	23,270,032
Options	2,430,000
Warrants	5,799,198
Market Capitalization	\$7.0MM
Working Capital <sup>1</sup>	\$1MM

1. As at October 15, 2020

### Significant Drill Intercepts at Select Properties

Property - Prospect	Type	DDH Name	Length (m)	Cu (pct)	Zn (pct)	Au (g/t)	Ag g/t
Big Island - Tara	Massive Sulphide	TZ-20-07	15.5	0.99	21.10	5.45	142.4
Albert's Lake - Main	Vein Gold	AL-11-57TW	27.9	-	-	3.46	9.1
Albert's Lake - South	Vein Gold	AL-20-302	5.5	0.01	-	4.37	14.6
Albert's Lake - Lion	Vein Gold	98-LW-16	3.3	-	-	38.5	49.8
Albert's Lake - Leo Lake	Massive Sulphide	AL-91-113	2.3	8.38	0.96	-	-
Mink Narrows - Copper Reef	Massive Sulphide	MN-08-46	10.2	3.66	0.28	0.50	-

### Advisors

John D. Harvey  
Robert D. Cudney  
Edward Thompson

### Board

Fraser Laschinger  
Brent Peters  
Stephen Masson  
Ross Orr

### Management

Brian Howlett – **CEO, Director**  
Michael Leskovec – **CFO**  
Stephen Masson – **VP, Exploration**  
Laara Shaffer – **Corporate Secretary**

### Significant Shareholders

**Northfield Capital Corporation**  
**31.8%**

### CONTACT US

+1-647-227-3035  
investor@voyageurexplorers.com

VOYAGEUR MINERAL EXPLORERS CORP.

141 Adelaide St W, Suite 301  
Toronto ON M5H 3L5

# REIMAGINING THE HISTORIC RICE LAKE GOLD DISTRICT

By Scott Anderson, Ph.D., P.Geo, Vice President, Exploration, 1911 Gold Corporation



**1911** Gold Corporation (the “Company” or “1911 Gold”) is a junior gold explorer and producer that holds more than 57,000 hectares of mineral dispositions in Tier-1 exploration and mining jurisdictions with proven potential for world-class gold deposits, including the Rice Lake and Snow Lake districts in Manitoba, and the Timmins district in Ontario.

The company’s consolidated, district-scale (54,000 hectares) land position in the historically fragmented and underexplored Rice Lake greenstone belt, coupled with the permitted and operational 1,300 tonnes-per-day mill and tailings facility (the True North complex) at Bissett, Manitoba, are critical strategic assets, setting 1911 Gold apart from its peers. Together with a significant revenue stream from the reprocessing of historical tailings, which produces approximately 5,000 ounces of gold per year, and funds ongoing operational and corporate costs, thus minimizing shareholder dilution, the Company’s assets present a significant value proposition for shareholders.

The Rice Lake project covers a 70-kilometre segment of a crustal-scale break referred to as the Wanipigow Fault, which defines an ancient craton margin and represents a critical regional control on orogenic gold deposits. The Rice Lake belt is the western extension of the prolific Red Lake greenstone belt, located approximately 100 kilometres to the east along strike in Ontario, that boasts well over 40 million ounces of past gold production, resources, and reserves.

Commencing in 2019, 1911 Gold initiated an aggressive regional exploration program of its Rice Lake land package with high-resolution aeromagnetic and LiDAR surveys, acquisitions of additional prospective ground, data compilations, and a highly successful field exploration campaign involving mapping, prospecting, and surficial geochemistry.

Using a systematic, science-based exploration approach, the company efficiently advanced two projects to first-pass drill testing, including six targets with no record of previous drilling. Highlights of the Phase I drilling program, completed between November 2019 and March 2020, are listed below (please refer to the 1911 Gold website for additional details).

2019–2020 Phase I Exploration Drilling Program – Highlights:

- 26.4 g/t Au over 2.0 metres (DDH TS-20-003) from the Tinney Shear target
- 43.3 g/t Au over 0.7 metres (DDH TS-20-004) from the Tinney Shear target
- 9.3 g/t Au over 2.6 metres (DDH CG-20-001) from the Cougar target



## REIMAGINING THE HISTORIC RICE LAKE GOLD CAMP

*A junior gold producer leading the next generation of precious metals exploration and development*



- Top-tier exploration and mining jurisdiction
- Consolidated district-scale land position
- Underexplored world-class gold potential
- Permitted operational mill complex
- Revenue stream from reprocessed tailings
- Experienced management and technical team
- Comprehensive, fully-funded exploration program

*Opportunity for significant value creation through discovery*

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- 2.2 g/t Au over 12.2 metres (DDH BL-20-002) from the Bidou South target
- 6.2 g/t Au over 2.6 metres (DDH EO-20-002) from the Edna-Otter target
- 2.4 g/t Au over 5.3 metres (DDH JT-20-003) from the Janet target

The Phase I drilling was in the vicinity of the historic Gunnar, Central Manitoba and Ogama-Rockland mines, approximately 35 kilometres southeast of the True North complex, which collectively produced approximately 300,000 ounces of gold. The drilling intercepted quartz-carbonate vein systems and associated alteration, with localized high-grade and visible gold, along kilometres-scale structures identified by mapping and interpretation of aeromagnetic and LiDAR data, within larger-scale domains of stratigraphic and structural complexity, providing considerable scale and scope for follow-up exploration.

Following a complete shutdown of the True North complex from late March to late April 2020 due to the COVID-19 pandemic, our Manitoba-based exploration field crews were returned to site in stages in early May, under new policies and procedures put in place by 1911 Gold to mitigate the spread of COVID-19. To date, there have been no reported cases of COVID-19 related to the True North site or 1911 Gold. The Company continues to actively monitor this situation and will revise work plans as necessary, with strict adherence to provincial guidelines and health orders.

Fieldwork in 2020 included detailed geological mapping, prospecting, soil and vegetation sampling and ground geophysical surveys, which succeeded in further delineating targets identified in 2019 and in discovering several exciting new targets, most notably the high grade “Woodchuck” showing, which returned up to 858 g/t Au from initial grab samples of a quartz-carbonate vein stockwork associated with tourmaline-matrix breccias.

Building on exceptional results from the 2020 field program, the fully permitted 2020–2021 Phase II drilling program is planned to include at least 18,000 metres of diamond drilling, funded from the proceeds of a \$5.2 million private placement financing that closed in July 2020. The Phase II drill program is designed to include 10,000 metres of follow-up drilling on targets successfully tested and confirmed during the Phase I program, as well as 8,000 metres of first-pass drilling of seven new targets (most with no record of historical drilling) identified during the 2019 and 2020 field programs.

With its growing pipeline of quality projects and targets, the Company is positioning itself for continued exploration success, with the goal of identifying and developing additional sources of ore to augment the existing mineral resource within the True North deposit, estimated (March 2018) to contain approximately 1 million ounces of gold in the measured, indicated and inferred categories.

The Company’s land package is located within the traditional territory of the Hollow Water First Nation, signatory to Treaty No. 5 (1875-76), and the Company continues to benefit from open, cooperative and respectful relationships that have been maintained with all stakeholders over the years. 1911 Gold is committed to excellence in health, safety and environmental standards, timely information sharing and supporting local and Manitoba-based businesses to maximize local economic benefits.

With an experienced management and technical team, clear corporate strategy, clean balance sheet, well-funded exploration program, strong project portfolio in an established operating jurisdiction, and systematic approach to exploration, the Company is well positioned to execute on its plan to generate significant value through discovery of a Tier-1 gold resource while leveraging its existing infrastructure to quickly advance new discoveries into production. ✖

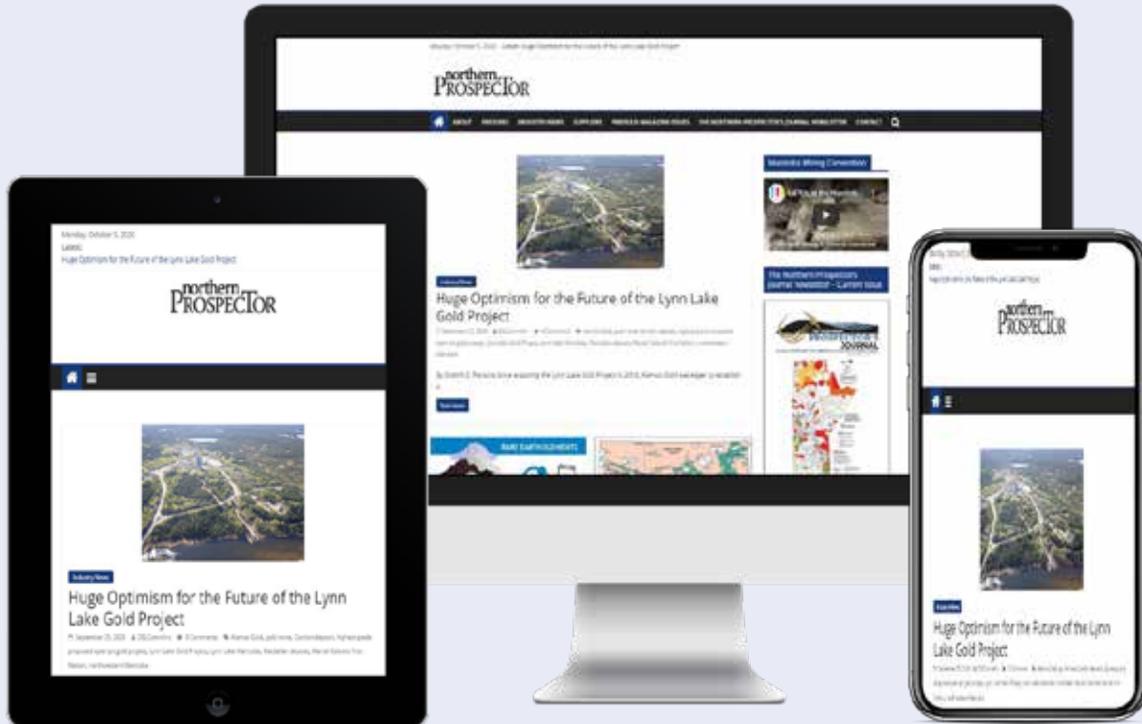
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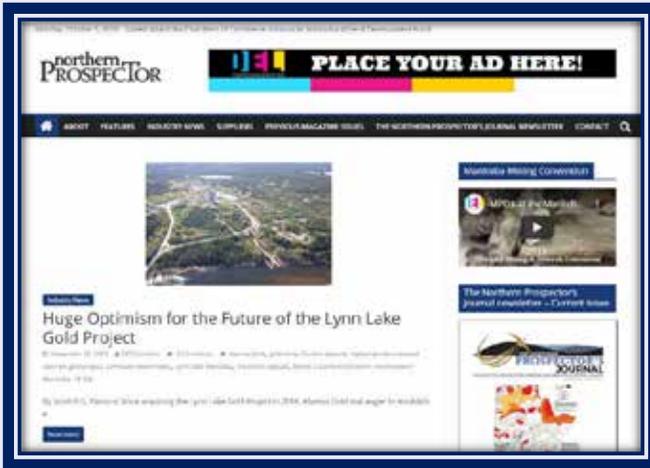
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*Northern Prospector online* is also home to the association's monthly e-newsletter, The Northern Prospector's Journal, which is the voice for prospectors and mineral exploration in Central Canada. Released at the start of every month, this e-newsletter is also sent out to a virtual mailing list of over 1000 people. The e-newsletter is also available on our site and contains monthly association news and prospecting information from across our region.

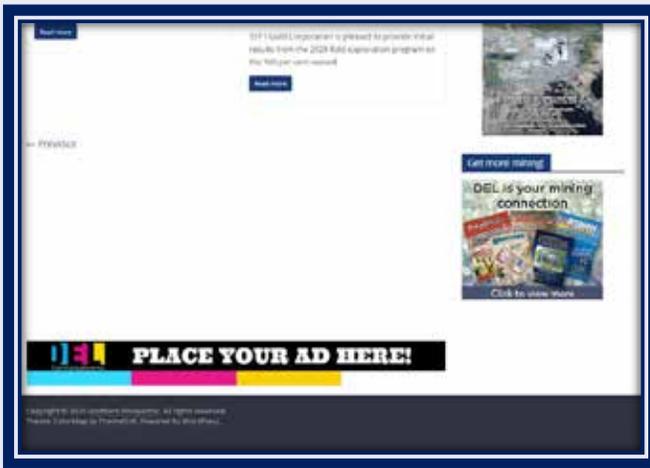
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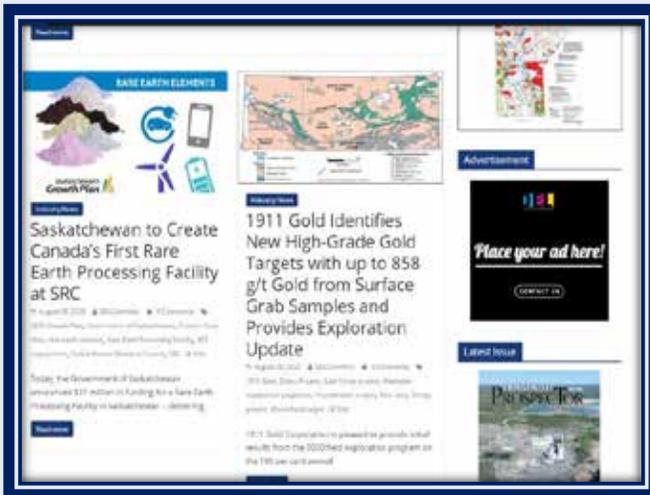
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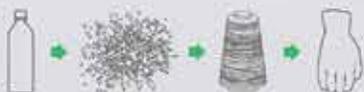


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Watson Gloves is excited to announce the introduction of **WasteNot™** yarn into select products. Due to increased awareness of the harm that plastic pollution produces, there is greater demand for ways to deal with our plastic waste and **WasteNot™** is our innovative way to be more sustainable.

**WasteNot™** polyester used in our Hero and Karma gloves are made from 25% (+/-2%) post consumer recycled PET bottles. That's one - 500ML bottle per pair!



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