# A Key Link in the GLOBAL RARE EARTH Supply Chain A Vital New Industry Comes to Saskatoon



## **\$20 Million** Rare Earth Extraction Facility to Create 40+ Jobs

Saskatoon will soon be a North American hub for the processing and researching of Rare Earth Elements (REE), the critical minerals essential to almost every aspect of our modern, clean-tech world.

Vital Metals Canada Ltd. began construction in late 2021 of its Rare Earth Extraction Facility, a \$20 million, 3,714 square meter investment at 2950 Miners Avenue in Saskatoon. Beginning this summer, it will process Rare Earth Element (REE) concentrate mined and beneficiated last year at its Nechalacho Mine in the Northwest Territories. The initial product is destined for Norway.

"Saskatoon will be a key link in delivering these critical minerals to a rapidly growing, truly global market," says Geoff Atkins, Managing Director of Sydney, Australia-based Vital Metals Ltd. "We're excited to



see the progress here. This marks Phase One of our vision, and we'll be doubling its capacity in 2024."

Atkins underlines the need for some 40 skilled technicians and staff. "We will be seeking applications for a full range of positions starting with the process plant manager," says Atkins. "We also value the connection with our neighbour, the Saskatchewan Research Council, which is providing lab facilities and R&D supporting the rare earth sector."

Saskatoon is an ideal continental hub for this new industry, a vibrant and growing city with excellent transportation, educational, labour, regulatory, power and support infrastructure for Vital's rapidlygrowing supply chain. Vital's other deposits in Western Quebec await development and may provide additional feedstock.

# **Thank You Saskatoon!**



**Geoff Atkins** Managing Director Vital Metals Canada Ltd.



Seeing our state-of-the-art processing facility nearing completion here in Saskatoon is tremendously satisfying for me and our team. Vital Metals' vision is to create an efficient global REE supply chain of light and heavy rare earths, independent of China and Russia, that will be reliable, affordable, and socially and environmentally responsible.

Saskatoon is playing an essential role in fulfilling that vision. Your city will host the first operating facility of its kind in North America to process the light and heavy REE concentrate we're now mining in the NWT. By the summer of 2022, we'll be hiring the skills your province has for our initial 40-person team. We expect it will grow for the Phase Two expansion in 2024.

The welcome we've received in your dynamic and vibrant city assures me that we've chosen the best possible place to realize our goals in North America. We look forward to collaborating with Saskatoon and Saskatchewan as we realize the vision of becoming a continental hub for the rare earth value chain.

Thank you, Saskatoon, and thank you, Saskatchewan.



## Why Saskatoon?

- Central location to all North America
- Ample supporting infrastructure
- Saskatchewan's historic mining culture
- Skilled labour force
- Saskatchewan Research Council linkage
- Quality education institutions
- ► Great family-centred lifestyle for our team
- Competitive electrical power
- A timely and progressive regulatory system



#### Local Purchasing is Good Business!

The Rare Earth Extraction Facility is being constructed by local contractors, with the majority of its ongoing inputs sourced in Saskatchewan. The Saskatchewan Research Council will provide ongoing laboratory support to assure the quality of our product through the extraction process.

## From Mine to Market, REE Processing is a Complex Business

In October of last year, 500 tonnes of rare earth concentrate began the 1,700 kilometre barge, rail and truck trip from the Nechalacho Mine near Yellowknife, NWT, to Saskatoon. It will be the initial feedstock to be transformed into a mixed rare earth carbonate product already marked for sale to REEtec's refinery in Norway which will separate the individual high purity rare earths.

That feedstock is a heavy, reddish ore called bastnaesite (as shown on the cover). It's typical of most rare earth deposits, where as many as 17 REE are bound together in a tight geochemical bundle. Multi-stage processing is required to separate them and achieve the stringent purity demanded by clean-tech and hi-tech industries. The concentrate will be crushed, screened, baked in a kiln, then treated with an acid leach. Purification and precipitation will follow, with a number of solid and liquid separation stages using conventional centrifuges and a filter press. The final product is an intermediate rare earth carbonate filter cake. All waste products will be disposed of offsite by licensed operators.

Phase One of the Rare Earth Metallurgical Processing Facility has been designed to process 5,125 tonnes of concentrate per year with an output of 1,000 tonnes of cerium-reduced mixed rare earth carbonate, expected to yield 464 tonnes of magnet metals (neodymium and praseodymium) annually. The Phase Two expansion, planned at the same site in 2024, will double this capacity.



A dense media separator, one of several processing components.

#### Rare Earth Extraction Multi-Stage Processes

- 1. ORE CRUSHING
- 2. DENSE MEDIA SEPARATION
- 3. GRAVITY CONCENTRATION
- 4. BAKING OR CALCINATION
- 5. ACID LEACH
- 6. 1ST CENTRIFUGATION
- 7. IMPURITY REMOVAL (IRON + ALUMINUM)
- 8. 2ND CENTRIFUGATION
- 9. RARE EARTH CARBONATE PRECIPITATION
- 0. THICKENING
- 11. PRESSURE FILTRATION AND BAGGING

## We Hire and Buy Local!

A core value of Vital Metals and its mining subsidiary, Cheetah Resources Corp., is to maximize benefits to residents and businesses. It's already in practice; over the 2021 season at the Nechalacho Mine, 70 per cent of the 58-person team was Indigenous and 85 per cent called the NWT home. More than 160 NWT businesses helped Cheetah chalk up an impressive record of 90 per cent northern, and 85 per cent Indigenous procurement by value.

We are committed to diversity and inclusion and are excited about developing partnerships with world class educational institutions such as Saskatchewan Polytechnic and the University of Saskatoon.

Vital's Human Resources team will soon start recruiting for the estimated 40 skilled operators for Phase One, including metallurgists, kiln and purification operators, division managers, and maintenance and support technicians.

Along with the challenge and satisfaction of being part of a world-leading critical materials company and fulfilling the needs of the clean-tech and high-tech sectors, these fulltime positions offer competitive salary and benefit packages. Starting date for most of the positions is expected over the summer of 2022.

For further details on joining the Vital Metals team in Canada, please contact:

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### THE NECHALACHO STORY Canada's First Rare Earth Mine

### CHEETAH RESOURCES



Nechalacho is the Wiilideh Dene name for a sheltered bay on the rugged, rocky north shore of Great Slave Lake. Fifty years ago, prospectors discovered a nearby showing of minerals needed for emerging clean-tech and hi-tech technologies. Since then, several companies have invested over \$100 million proving Nechalacho to be one of the world's richest deposits of both light and heavy rare earth elements.

In 2020, Vital Metals Ltd. (ASX:VML, OTCQB: VTMXF) purchased the surface and near-surface rights to mine the 5,886 hectare block from Avalon Advanced Materials (TSX: AVL). That same year, it mobilized its Yellowknife-based subsidiary, Cheetah Resources Corp., to begin mining the 101,000 tonne resource (grading 9.01% Light Rare Earth Oxide) at the North T deposit.

In the five-month 2021 season, some 58,000 tonnes of North T ore was mined and stockpiled, and 1,000 tonnes of concentrate produced. Mining and concentrating will continue through the 2022 to 2024 seasons. Cheetah plans then to move in stages towards mining the mammoth, multi-generational 94.7 million tonne Tardiff deposit (grading 1.46% Rare Earth Oxide measured, indicated and inferred).

Cheetah's innovative strategies keep the mine's environmental footprint as small as possible. At its heart is the TOMRA sensor-based ore sorter, a portable, low-impact concentrator that uses X-ray and air-jet technology to sort the bastnaesite REE ore from its country rock host. No water or chemicals are used, and no tailings are produced, with a carbon and physical footprint about 90% less than conventional mining. Cheetah uses barge, ice road and air service connecting Nechalacho with the NWT capital, Yellowknife, 110 kilometres to the northwest, and barge, rail and highway transport from site to and from the trans modal shipping hub of Hay River, NT.

In Western Quebec, Cheetah Resources is proceeding with community relations and due diligence at its advanced Kipawa heavy rare earth deposits, which has the potential to provide additional feedstock for the Saskatoon facility.



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