



5 June 2024

Exploration commences at Joule Property

Highlights:

- 2024 targeted summer field program underway at the highly prospective Joule Property, James Bay.
- Previous radiometric surveys have identified elevated equivalent-Thorium (eTh) concentrations up to 22ppm, a common marker of significant Rare Earth Element (REE) mineralisation. These findings highlight high priority targets for the Company's exploration program.
- The JBY exploration team is equipped with a scintillator, a key technology used for identifying Rare Earth Element (REE) mineralisation.
- Fieldwork has started across hundreds of previously identified high-priority LCT (lithium-caesium-tantalum) pegmatite targets.
- The Company's La Grande Projects, which are prospective for both lithium and rare earths, are located along-trend from Winsome Resources' (ASX: WR1) Cancet Lithium Project and Patriot Battery Metals' (ASX: PMT) Corvette Lithium Project.

James Bay Minerals (ASX: **JBY**) ("**James Bay**", or "**the Company**") is pleased to announce that exploration activities have commenced targeting both rare earth and lithium potential across its flagship Joule Property, located in the prolific Eeyou Istchee-James Bay district in Quebec, Canada.

Over the past six months, a substantial target list has been compiled using data derived from the Company's maiden exploration program last year. This program specifically emphasised the use of aerial surveys employing LiDAR, high-resolution photography, as well as Aeromagnetic and Spectromagnetic surveys. As anticipated, the target list comprises a considerable number of high-priority LCT pegmatite targets. However, what is particularly encouraging are the significant Rare Earth Element (REE) targets. These targets have exhibited elevated equivalent-Thorium (eTh) levels, indicating the presence of significant REE mineralisation¹. Concurrent exploration activities will be undertaken for both LCT pegmatites and REE mineralisation.

James Bay Executive Director, Andrew Dornan, commented:

"In late 2023, despite having just a couple of months before snowfall, our fieldwork was directed towards the Aero Property, thanks to its convenient access directly off the Trans-Taiga highway. Now that the Canadian winter has passed, we're shifting gears with our sights set on the exciting Joule Property."

"The Rare Earth targets identified through the radiometric surveys show significant promise, and the team is looking forward to delving deeper into these zones to unlock their full potential while also exploring the numerous priority lithium-pegmatite targets identified across the Property."

¹ See James Bay Minerals Announcement dated 15 February 2024: "New rare earths and uranium targets identified at Joule"

During the Company's inaugural 2023 field program, a modest exploration camp was set up on the Joule Property. This now serves as the team's current base for exploration activities.



Figure 1 – Exploration Camp, Joule Property.



Figure 2 – Outcrops within the Joule Property, accessed via helicopter.

Joule Property – La Grande Project

The Joule Property covers an area of 16,385 hectares along the Robert-Bourassa reservoir. Joule has a ~24km deformation zone running from east to west through the property with deformation widths of up to 1.5km in the north-eastern part of the property.

Fieldwork will be undertaken across key LCT pegmatite targets², along with the significant REE targets generated from LiDAR, high-resolution photography and Aeromagnetic and Spectro magnetic surveys.

Rare Earth Element (REE) Exploration Activities

Planned exploration activities will see the team utilising a helicopter to reach the key areas that displayed elevated equivalent-Thorium (eTh) readings. Once within these key areas, the team will utilise scintillator technology to further increase confidence in potential REE mineralisation and follow up with geochemical sampling for laboratory analysis.

Figure 3 below displays the extensive spread of elevated equivalent Thorium concentrations (eTh) levels throughout the Joule Property, firstly through the highly prospective regional fault which runs from east to west through the property and, secondly, in a large cluster to the south-east of the property

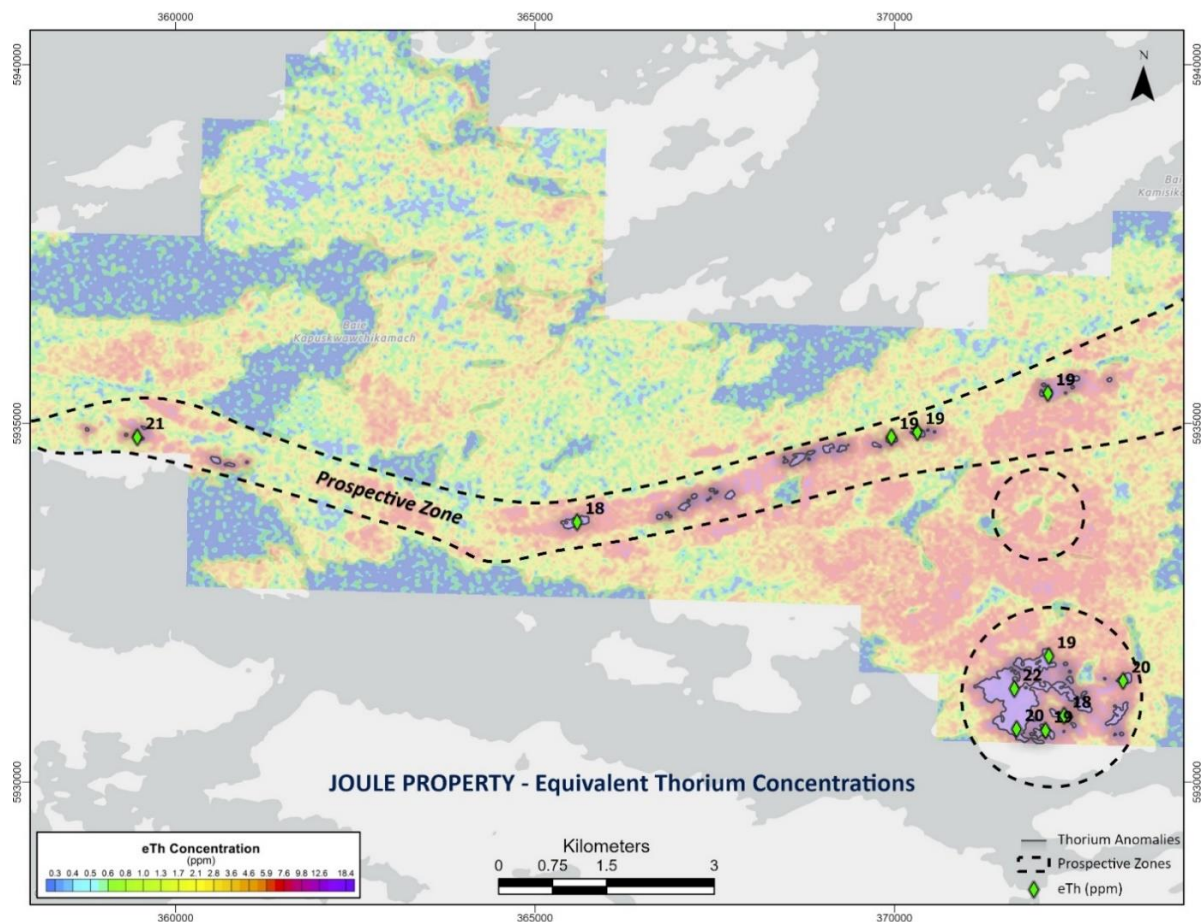


Figure 3 – Prospective REE zones with elevated radiometric eTh readings.

² See James Bay Minerals Announcement dated 6 February 2024: "Multiple High-Priority Targets Identified at La Grande"

Scintillators are used in various analytical techniques, including in identifying rare earth elements. A simplified explanation of how they are utilised for identifying rare earth elements is provided below:

1. **Interaction with Radiation:** When radiation, such as gamma rays or X-rays, interacts with a scintillator material, it produces flashes of light. This process is known as scintillation.
2. **Unique Emission Spectra:** Different elements emit unique patterns of light when they interact with a scintillator. This is because the scintillation process depends on the specific energy levels and electronic configurations of the atoms involved.
3. **Energy Detection:** By measuring the intensity and characteristics of the light emitted by the scintillator, geologists can determine the energy of the incoming radiation.
4. **Analysis:** Rare earth elements have distinct energy signatures when they interact with scintillator materials. By comparing the observed emission spectra to known spectra of different elements, geologists can identify the presence of rare earth elements in a sample.
5. **Quantification:** The intensity of the emitted light is also proportional to the energy deposited by the radiation in the scintillator material. This allows for the quantification of the amount of rare earth elements present in a sample.

Overall, scintillator-based techniques offer a powerful and sensitive method for identifying and quantifying rare earth elements in various samples, ranging from geological samples to industrial materials.

LCT Pegmatite Exploration Activities

In parallel to REE exploration, the Company's focus remains on comprehensively understanding the LCT pegmatite potential across the property. Aerial surveys conducted in late 2023 provided the initial insights necessary for this understanding. Now, armed with the key targets delineated in Figure 4, the JBY team is ready to undertake methodical field mapping, rock chip sampling and, where appropriate, channel sampling.

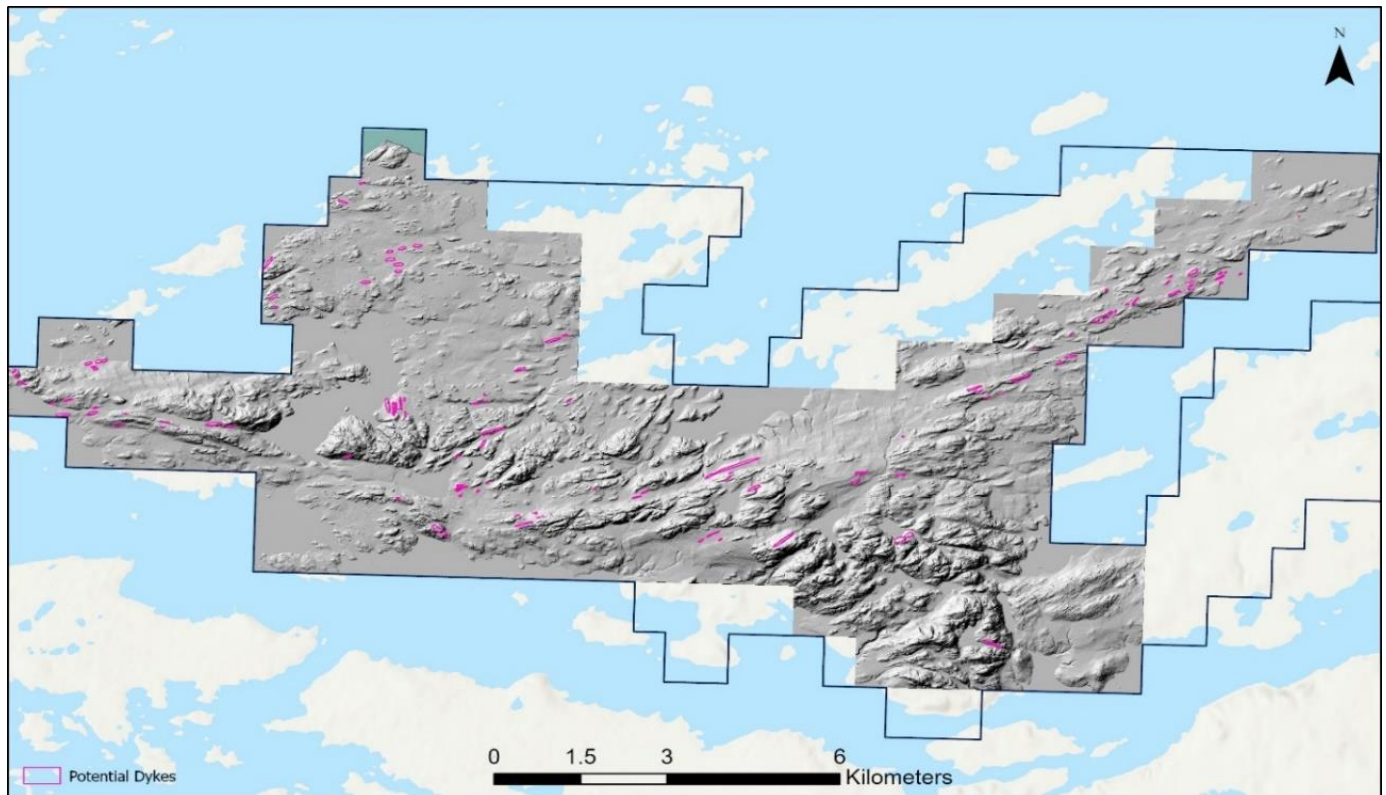


Figure 4 – High-priority LCT pegmatite targets/dykes across Joule Property defined in pink.

Background on James Bay Minerals

James Bay has acquired a 100% interest in one of the largest lithium exploration portfolios in the James Bay region, covering an area of 41,572Ha or 416km². The Joule, Aero, Aqua and La Grande East Properties are located in the La Grande sub-province along-trend from the Corvette deposit, where Patriot Battery Metals (ASX: PMT) recently reported a maiden Inferred Mineral Resource Estimate of 109.2Mt at 1.42% Li₂O and 160ppm Ta₂O₅ (0.40% Li₂O cut-off grade)³.

The Troilus Project is located further to the south sitting only 5km to the north of Sayona's Moblan Lithium Project and in close proximity to Winsome Resources' Sirmac-Clappier Project.

³ See Patriot Battery Metals Announcement dated 31 July 2023: "Patriot Announces the Largest Lithium Pegmatite Resource in the Americas at CV5, Corvette Property, Quebec, Canada"

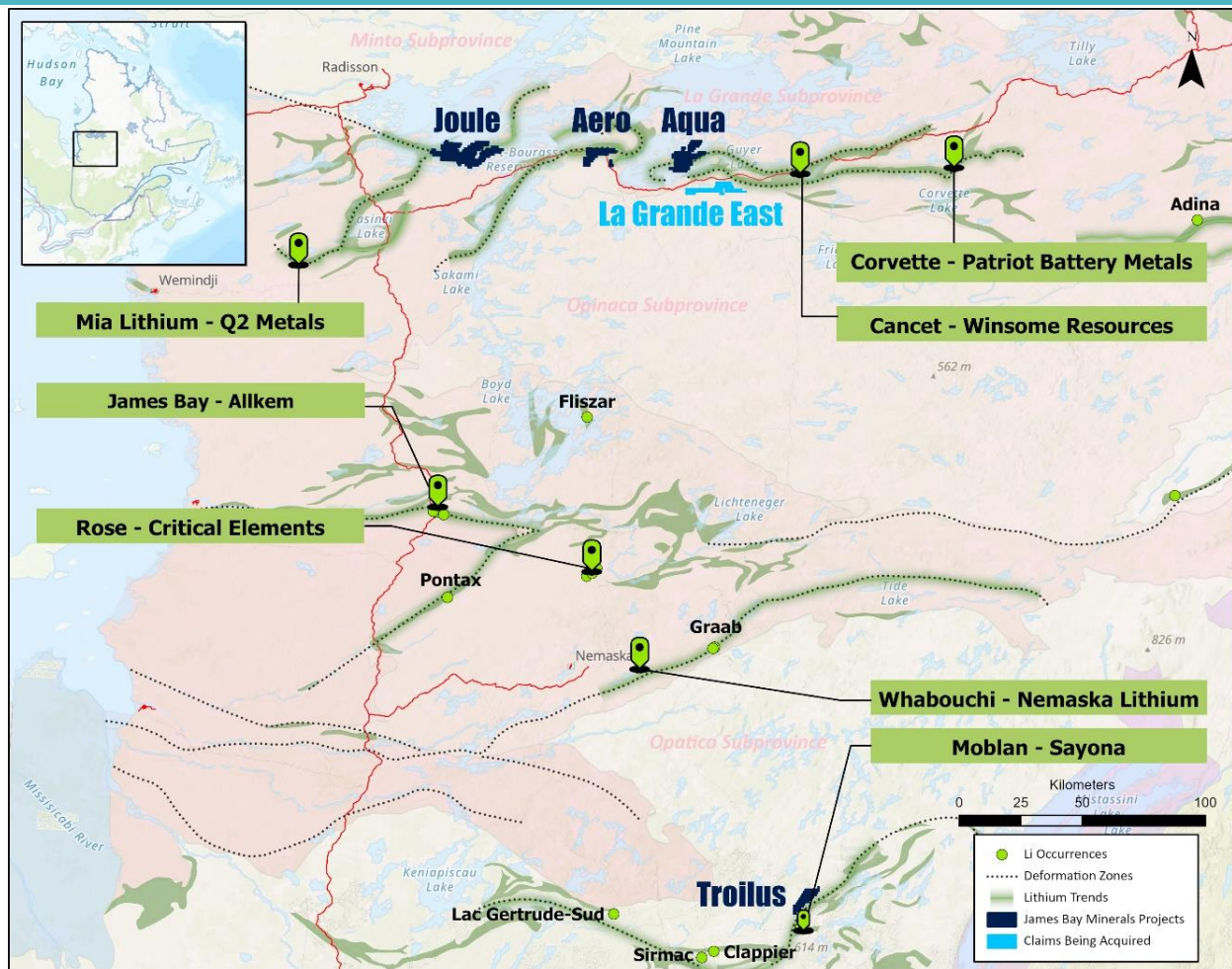


Figure 5 – James Bay Minerals' key lithium project locations in Quebec, Canada.

The flagship Joule Property encompasses a ~24km long prospective deformation zone along a regional fault which has been subject to minimal historical exploration⁴. The eastern segment of the deformation zone extends for 14km and fan tails to reach a width up to 1.5km.

The Aero Property contains approximately 12km of deformation zones which are considered highly prospective for LCT pegmatites⁴. Of note, the nearby Cancet (Winsome Resources Ltd) and Corvette (Patriot Battery Metals) properties both exhibit deformation zones upon which significant exploration success has occurred.

The Aqua Property contains a deformation zone running east to west through the property of approximately 6km, this zone is considered prospective for LCT Pegmatites⁴. Of note, FIN Resources has uncovered a significant lithium showing approximately 200m from the north-western border of the Property⁵.

The La Grande East Project was acquired in Q1 2024 due to several key attributes – namely, two magnetic lows which are interpreted to trend into Patriot Battery Metals' Project, multiple large white dyke-like features identified from satellite imagery and the fact that the Project sits less than 1km from the Transtaiga Highway, allowing all year walk-up access.⁶

⁴ See JBY Prospectus dated 19 July 2023

⁵ See FIN Resources Announcement dated 9 October 2023: "Large Spodumene Crystals Discovered in Pegmatite Outcrop"

⁶ See James Bay Minerals announcement dated 28 March 2024: "James Bay Expands Quebec Footprint"

All of the properties have the three key ingredients required to host massive lithium-caesium-tantalum (LCT) pegmatites, namely:

- Neo Archaean rocks;
- Placement along major regional faults; and
- Located on greenstone belts in proximity to granites.

This announcement is authorised for ASX lodgement by the Board of Directors of James Bay Minerals Ltd.

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Competent Person Statement

*The information in this announcement that relates to Exploration Results at the La Grande and Troilus Projects is extracted from the Company’s Prospectus dated 19 July 2023 (**Prospectus**) and the ASX announcements (**Original Announcements**) as referenced. The Company confirms that it is not aware of any new information or data that materially affects the information contained in the Prospectus and Original Announcements.*