



## **Geomega Resources Inc.**

Management's Discussion and Analysis  
Quarterly Highlights

Six months ended November 30, 2024

# Geomega Resources Inc.

## Management Discussion & Analysis – Quarterly Highlights

Six months ended November 30, 2024

The following management discussion and analysis - quarterly highlights (the “MD&A Highlights”) of the financial condition and results of the operations of Geomega Resources Inc. (the “Corporation”, “Company” or “Geomega”) constitutes management’s review of the factors that affected the Corporation’s financial and operating performance for Q2-25 YTD. This MD&A Highlights should be read in conjunction with the Corporation’s unaudited condensed interim financial statements as of November 30, 2024 prepared in accordance with the International Financial Reporting Standards (“IFRS”), as well as with the management discussion and analysis for the year ended May 31, 2024. All figures are in Canadian dollars unless otherwise noted.

Further information regarding the Corporation and its operations are filed electronically on the System for Electronic Document Analysis and Retrieval (SEDAR) in Canada and can be found on [www.sedar.com](http://www.sedar.com).

Abbreviation	Period
Q1-24	June 1, 2023 to August 31, 2023
Q2-24	September 1, 2023 to November 30, 2023
Q2-24 YTD	June 1, 2023 to November 30, 2023
Q3-24	December 1, 2023 to February 29, 2024
Q4-24	March 1, 2024 to May 31, 2024
Fiscal 24	June 1, 2023 to May 31, 2024
Q1-25	June 1, 2024 to August 31, 2024
Q2-25	September 1, 2024 to November 30, 2024
Q2-25 YTD	June 1, 2024 to November 30, 2024
Q3-25	December 1, 2024 to February 28, 2025
Q4-25	March 1, 2025 to May 31, 2025
Fiscal 25	June 1, 2024 to May 31, 2025

### 1. NATURE OF ACTIVITIES

Geomega is a mineral exploration and evaluation Corporation focused on the discovery and sustainable development of economic deposits of metals in Quebec. Geomega is committed to meeting the Canadian mining industry standards and distinguishing itself with innovative engineering, high stakeholder engagement and dedication to local transformation benefits. The common shares of the Corporation are trading under the symbol GMA on the TSX Venture Exchange (the “Exchange”) and under the symbol GOMRF on the OTCQB market.

As society moves from consumption of fossil fuels to more sustainable energy sources, Geomega believes that the future of clean energy resides in one of the rare earth elements (“REE”) called neodymium. Neodymium is vital for the production of high-performance permanent magnets used in a wide variety of electrical motors. Such motors are in increasing demand with the growth of sustainable-energy initiatives such as hybrid and electric vehicles and direct-drive wind turbines.

Innord Inc. (“Innord”) is the innovation arm of Geomega and was created in March 2015 to optimize the value of the separation technology by facilitating its development through direct investments of key financial partners. Innord is a wholly owned subsidiary of Geomega that holds all the separation rights and laboratory equipment. The primary goal of Innord is to successfully develop and scale-up its proprietary technologies. All research and development initiatives of Geomega are conducted by Innord.

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### 2. CORPORATE UPDATE

#### 2.1 Corporate Overview

Geomega develops innovative processing technologies for the metal and mining industries which includes extraction, separation and recycling technologies for bulk, base, precious and critical and strategic metals. Geomega's core technologies include integrated reagent recycling that offers minimal effluents and a reduction of GHG emissions, critical metal extraction, iron recovery, CO2 utilization and others. These technologies are then applied to various primary and secondary feeds to help reduce waste from mining and industrial operations while valorizing the metals found in it. Various projects incorporating these technologies that Geomega is working on include rare earths magnet recycling, bauxite residues valorization, rare earths extraction from mineral ores such as bastnaesite from the Montviel project, sulphide minerals processing to recover gold, base and bulk metals from refractory ores and tailings, synthetic calcite production for the cement industry and several others.

The two most advanced projects for the Corporation remain the rare earth magnet recycling and bauxite residues processing and valorization. The magnet recycling project is now in the demonstration plant stage. This project will be implemented in Saint-Hubert, QC and the Corporation has received several grants over the last few years to support this development. The bauxite residues processing and valorization project is now in the small-scale piloting phase and is being executed in Geomega's laboratory facilities in Boucherville, QC. The project has been funded by several grants over the past few years and industry.

#### 2.2 Financial Highlights

Geomega has \$860,516 in cash and cash equivalents (\$882,516 including the short-term investments) as at November 30, 2024 and a working capital of \$1,458,288 (working capital of \$2,451,511 as at May 31, 2024).

For the Q2-25 YTD, the Corporation recorded a net loss of \$1,225,543 compared to a net loss of \$1,282,474 in Q2-24 YTD. Excluding the effects of fluctuations from the investment in an associate, a net loss of \$972,686 was realized in Q2-25 YTD compared to a net loss of \$692,473 in Q2-24 YTD. The main variations are as follows:

- Exploration and evaluation expenses, net of tax credits of \$251,839 (\$84,051 in Q2-24 YTD). There is actually no significant fieldwork on the Montviel property, but Geomega was performing bench-scale testwork to improve its previously patented extraction process with objectives of simplifying the operations, increasing profitability and improving sustainability. More resources have been allocated to this project during the summer and fall 2024.
- Research and development expenses, net of tax credits of \$894,220 (\$1,017,839 in Q2-24 YTD). Work on magnet recycling and bauxite residue are progressing. Refer to sections 2.4 and 2.5 for more details on the progress made on these projects.
- Salaries, employee benefits and share-based compensation of \$366,133 (\$212,882 in Q2-24 YTD). There was no increase in headcount from Q2-24 YTD to Q2-25 YTD in the administration department, but the variation comes from the share-based compensation expense of \$153,046 following the issuance of options and other equity awards in January and November 2024.
- Travel, conference and investor relations of \$48,781 (\$72,442 in Q2-24 YTD). An amount of \$13,126 of 2024's balance comes from a share-based compensation allocated to a consultant, which was completely vested in Fiscal 25. The balance is due to travel expenses for conferences for which Geomega attended during Fiscal 24.

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### 2. CORPORATE UPDATE (CONT'D)

- Administration costs of \$92,576 (\$35,895 during Q2-24 YTD). While work was being performed on the concrete slab of the facility in Saint-Hubert, equipment received had to be moved and warehoused offsite, which incurred costs of approximately \$14,000. The Corporation also paid recruiting fees to hire two new employees during Q2-25 YTD for approximately \$30,000.
- Depreciation of right-of-use assets of \$74,311 (\$107,305 during Q2-24 YTD). In April 2023, the Corporation signed a lease agreement in Saint-Hubert and negotiated its exit from its previous premise in Saint-Bruno-de-Montarville. The Corporation assumed the 2 leases until September 2023 and signed an agreement with the owner of the premises at 1123 Marie-Victorin in St-Bruno-de-Montarville to vacate the premises in exchange for a lump sum amount of \$175,000, which explain the nonrecurring net gain on settlement of a lease agreement of \$171,242 recorded in Q2-24 YTD.
- Government grants on operating expenses of \$874,053 (\$703,937 during Q2-24 YTD). The Corporation has secured different grants to help develop its technologies and the projects have been progressing. More details are showed in section 2.3.
- Research income of \$201,335 (\$343,844 in Q2-24 YTD). Innord is performing research projects to apply its technology to the extraction of critical metals from processing bauxite residues. Part of the funding for these projects comes from partners in the aluminum sector. The research income is recorded based on the estimated progress made on the projects.
- Option income on exploration and evaluation assets of nil (\$44,492 in Q2-24 YTD). On August 31, 2023, the Corporation has optioned out the Montviel-Sud Property in exchange of a cash and share-based consideration. The option on this property was abandoned on August 5, 2024 and therefore no option payment were receive during Q2-25 YTD.
- Unrealized gain in fair value of investments in listed companies of \$98,713 (\$loss of \$61,765 in Q2-24 YTD). The Corporation owns shares of MTM Critical Metals which is listed on the ASX (MTM.AX). These shares were obtained in the option agreement on Pomme and Montviel-South projects. The market value of the MTM shares went from \$0.044 on May 31, 2024 to \$0.082 (AUD) on November 30, 2024.
- Impairment of an investment in an associate of \$220,318 (\$598,040 in Q2-24 YTD). The fair value of the investment in Kintavar Exploration Inc. continued to fall during Q2-25. Since the fair market value is lower than its book value, an impairment expense is booked in the financial statements to reflect its faire value.

### 2.3 Sources of financing

During the previous fiscal years, the Corporation secured different grants to help finance its R&D activities:

For the \$2.04M grant from Next Generation Manufacturing Canada (NGen) towards the construction of the magnet recycling demonstration plant, the following has been recorded to the financial statements so far:

	\$
Payment received (net of financing fees)	10,728
Accrued as at November 30, 2024	698,177

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### 2. CORPORATE UPDATE (CONT'D)

For the \$493K grant from the Program to Support Research and Development for the Extraction, Transformation and Recycling of Critical and Strategic metals, administered by Consortium de recherche et d'innovation en transformation métallique (CRITM), towards the development of a process for recycling of hydrochloric acid (HCl) from several metal chlorides which can be used for rare earth elements (REE) and scandium (Sc) recovery from multiple sources the following has been recorded to the financial statements so far:

	\$
Payment received	120,118
Accrued as at November 30, 2024	314,993

For the \$3M in funding from the Government of Canada's Critical Minerals Research, Development and Demonstration (CMRDD) Program, administered by Natural Resources Canada (NRCan), towards the construction of the magnet recycling demonstration plant, the following has been recorded to the financial statements so far:

	\$
Payment received	2,699,989
Accrued as at November 30, 2024	1,770,970

For the \$3M grant from the Technoclimat Program, administered by the Ministry of the Environment and the Fight Against Climate Change, Wildlife and Parks (MELCCFP) towards the construction of the magnet recycling demonstration plant, the following has been recorded to the financial statements so far:

	\$
Payment received	750,000
Accrued as at November 30, 2024	1,613,211

For the \$1.691M grants from the Sustainable Development Technology Canada (SDTC) and the Quebec Ministry of Economy and Innovation – Innovation Program, towards the development of a technology to reduce the bauxite residues:

	\$
Payment received	1,157,947
Accrued as at November 30, 2024	1,373,693

For the \$400K grant from the Ministry of Energy and Natural resources of Quebec (MERN) towards the development of bench scale technology for the treatment of Montviel REE deposit.

	\$
Payment received	160,000
Accrued as at November 30, 2024	400,000

#### 2.4 Demonstration Plant

During Q2-25, the Corporation continued engineering and procurement activities for the rare earth magnets recycling continuous demonstration plant. Ordering of the long lead items is now mostly complete. Short lead items procurement continued in priority sequence.

Process engineering work has continued. The main deliverables (P&ID and layout) have progressed significantly and are expected to be ready for construction in Q3-25.

Civil engineering work has seen the most progress during this quarter as the new concrete floors, drainage system, new water access, grounding, structural reinforcements and concrete pads for outdoors equipment were completed in January 2025. Work on fire protection, HVAC, lighting and the electrical room are to start in January 2025.

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### 2. CORPORATE UPDATE (CONT'D)

Equipment ordered throughout 2024 has continued arriving on site including some of the main long lead items that will continue arriving through the upcoming months. Structures for the equipment have been ordered and are expected to be delivered in Q3-25.

The underground concrete conduit to bring the increased power supply to the facility and the concrete base for the power transformer have been completed in December 2024. Once the construction of the electrical room is complete and the electrical distribution equipment is installed, Hydro Quebec will be able to proceed with connecting of the new power supply.

Selling of the equipment that is no longer needed for the continuous operation remained an ongoing activity.

Permitting activities continued with data being collected on Geomega's continuous plant design before a final submission for environmental permitting with the Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (MELCCFP) is done. Municipal permits are gradually being received in sequence as the required documentation for each permit is prepared and submitted.

#### 2.5 Bauxite Residues Processing

During Q2-25, the bauxite residues valorization technology pilot plant continued to operate on a regular basis. Testwork to produce the required amounts of the targeted products at the required specifications was completed and positive results were received from its partners. R&D and piloting work is now being planned for the upcoming year while discussions on scale up of the technology directly on site are ongoing. More information will be provided when available.

#### 2.6 Pyrrhotite tailings valorization

On September 24, 2024, Innord's technological solution was selected as one of the laureates of the circular mining innovation challenge by Vale Base Metals. The competition objectives were to identify novel technological solutions to enhance the recovery of valuable metals and minerals contained in low-grade pyrrhotite tailings, a residue remaining from mineral processing of sulphide ore. Innord is to receive an award of \$25,000 for its technology being selected from among 40 other solutions. Any further progress on testing the proposed innovative solution will be communicated when available.

#### 2.7 Various

On August 5, 2024, MTM Critical Metals Inc. sent a notice to the Corporation to opt out of the option agreement for the Montviel-Sud property. Therefore, Geomega still owns 100% of the rights to this property.

On October 29, 2024, the Corporation announced the extension of 11,459,093 warrants for one (1) year. These warrants, priced at \$0.25, were expiring on November 6, 2024.

On June 26, 2024, the Corporation held its annual and special shareholder's meeting. Matt Silvestro, Nick Nickoletopoulos, Kosta Kostic, Kiril Mugerma and Gilles Gingras were re-elected on the Board of Directors. The shareholders of the Corporation renewed the omnibus equity incentive plan (the "Omnibus Plan"), which offers incentive awards including stock options ("Options"), restricted share units ("RSUs"), performance share units ("PSUs"), and deferred share units ("DSUs") (collectively, the "Awards"). The aggregate number of common shares reserved for issuance pursuant to awards of Options granted under the Omnibus Plan shall not exceed 8% of the Corporation's total issued and outstanding common shares from time to time. In respect of DSUs, RSUs or PSUs, the aggregate number of common shares reserved for issuance pursuant to Awards other than for Options granted under the Omnibus Plan shall not exceed 5,000,000 common shares.

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### 3. OUTLOOK ON THE UPCOMING MONTHS

Geomega's objectives are to develop processing technologies and to apply them to rare earth elements and other critical and strategic metals where the existing technologies have poor environmental performance such as large footprints, high consumption of acids, low recoveries, large amounts of waste or loss of valuable metals. The various projects of the Corporation are in different phases of development but since many of these technologies and applications have synergies, the rate of progress in some of the projects can change significantly. Ultimately, Geomega is looking to apply its technologies to high value opportunities and deploy them through building and operating the plants, licensing to major companies around the world or a combination of both, depending on the project.

The Corporation's intended activities are presented here and are divided by major ongoing projects.

#### *Rare Earths Recycling Demonstration plant*

- Process engineering of the continuous design to continue
- Civil engineering to continue as needed
- Procurement activities:
  - Receive utilities and process equipment
  - Order remaining equipment
  - Sell non required equipment from the batch design
- Environmental and municipal permitting to continue
- On site work at the Saint-Hubert facility
  - Main civil work to be completed includes HVAC and fire protection
  - Installation and commissioning of the utilities
  - Installation and commissioning of the process equipment
- Test work – Perform various complimentary tests on process, final products, by products (as needed)
- Feed sourcing (regular ongoing activity)
- Discussions with potential oxide buyers

#### *Bauxite Residue Sustainable Processing*

- Continue bench scale testwork, modeling, process design and optimization
- Commission pilot plant equipment and modifications as required
- Pilot testing of the core of the transformation process

#### *Montviel REE Deposit – Bench Scale*

- Bench scale testwork, modeling, process design and optimization required to complete the current ongoing R&D project

#### *Other Sources & Other Metals (REE, Lithium, Graphite, Hydrogen and other metals)*

- HCl recycling process – Continue bench scale testwork as per the ongoing R&D project
- R&D on different feeds (mining and industrial waste)

#### *Corporate*

- Continue hiring for select key positions as needed.

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### 4. EXPLORATION AND VALIDATION OF THE SEPARATION TECHNOLOGY ACTIVITIES

Pierre-Luc Lalonde, P. Geo., a qualified person as defined by NI 43-101, supervised and approved the preparation of the technical information in sections 4.1, 4.2 and 4.3.

#### 4.1 Expenses Summary - Montviel Property

Montviel	Three months ended November 30		Six months ended November 30	
	2024	2023	2024	2023
	\$	\$	\$	\$
<b>Acquisition and maintenance</b>	-	-	-	-
<b>Exploration</b>				
Share-based compensation	63	291	63	727
Geology	-	-	10,472	-
Supplies	-	1,308	-	1,962
Taxes, permits and insurances	426	-	426	-
<b>Total Exploration</b>	<b>489</b>	<b>1,599</b>	<b>10,961</b>	<b>2,689</b>
<b>Evaluation</b>				
Salaries and benefits	110,798	49,564	251,212	77,537
Professional fees	-	-	8,137	-
Material and furniture	262	-	49,285	-
General and administration	51,546	-	80,963	-
Depreciation of property, plant and equipment	(346)	2,198	(630)	4,396
<b>Total Evaluation</b>	<b>162,280</b>	<b>51,762</b>	<b>388,967</b>	<b>81,933</b>
<b>Gross E&amp;E expenses</b>	<b>162,769</b>	<b>53,361</b>	<b>399,928</b>	<b>84,622</b>
Tax credits	-	(571)	(148,089)	(571)
<b>Net E&amp;E expenses - Montviel</b>	<b>162,769</b>	<b>52,790</b>	<b>251,839</b>	<b>84,051</b>

The Corporation owns 100% of the Montviel property, located approximately 100 km north of Lebel-sur-Quévillon and 45 km west of the Cree First Nation of Waswanipi. The Montviel property comprises 96 mining claims totalling 5,333 hectares as at November 30, 2024.

#### *Pomme Property (Under Option Agreement)*

The Pomme REE project (“Pomme”), also known as Montviel-Nord, is located adjacent to the north of the Montviel REE-Nb deposit. The Pomme property comprises 43 mining claims totalling 2,366 hectares as at November 30, 2024.

On February 22, 2023, the Corporation concluded an agreement with MTM Critical Metals Limited (ASX:MTM, “MTM”) to option out the Pomme property.



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### 4. EXPLORATION AND VALIDATION OF THE SEPARATION TECHNOLOGY ACTIVITIES (CONT'D)

The terms of the option agreement with MTM for pomme are as followed:

All amounts are in AUD	Cash Payments	Issuance of common shares	Work
	\$	\$	\$
<b>Option to earn 100%</b>			
At the signature of the LOI (completed)	20,000	Nil	Nil
At the signature of the final agreement (completed)	50,000	50,000	Nil
On or before February 22, 2024 (completed)	100,000	100,000	300,000
On or before February 22, 2025	100,000	100,000	700,000
On or before February 22, 2026	Nil	Nil	1,000,000
<b>Total for a maximum participation of 100%</b>	<b>270,000</b>	<b>250,000</b>	<b>2,000,000</b>

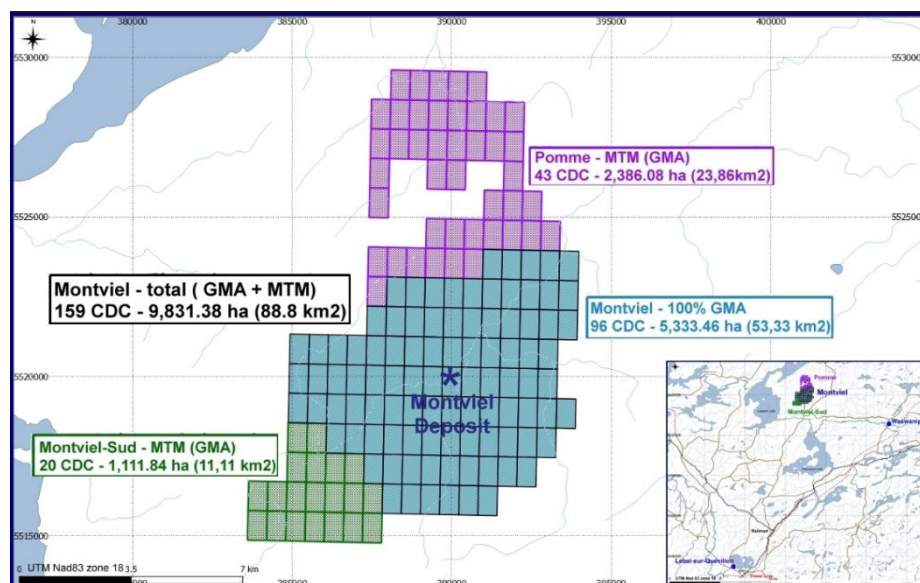
Pursuant to the agreement MTM will grant to the Corporation a 2% NSR on the property and the Corporation will grant MTM the right to buy-back at any time 1% for AUD \$1,000,000.

#### Montviel-Sud

The Montviel-Sud project is located adjacent to the south of the Montviel REE-Nb deposit. The Montviel-Sud property comprises 20 mining claims totalling 1,111 hectares as at November 30, 2024.

This property was optioned out to MTM in August 2023 but released on August 5, 2024. Therefore, Geomega still owns 100% of the rights to this property.

The following figure shows the different properties in the Montviel area:



### 4.2 Environmental Geochemistry

Several environmental studies on Montviel were launched between 2012 and 2015. Various data has been collected until 2017 by various research groups. No sampling is being done at the moment. Results of these studies could be used in the future for environmental permitting and baseline studies.

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### 4. EXPLORATION AND VALIDATION OF THE SEPARATION TECHNOLOGY ACTIVITIES (CONT'D)

#### 4.3 Preliminary Economic Assessment (“PEA”)

The corporate commitment to sustainable development dictated the following operational parameters for the Montviel project: i) underground mining scenario with paste backfill, ii) reduction in reagents to be transported by road and iii) electrical operations with a low voltage power line. It has taken more than three and a half years of metallurgical work and optimization to meet these three parameters.

In 2015, Montviel's flow sheet was greatly simplified. All of the acid required for hydrometallurgy was to be generated on site with the insertion of a closed loop acid regeneration unit. In addition, two physical processes at the beneficiation step significantly decreased the ore mass moving to hydrometallurgy.

The Corporation continues to evaluate the rare earth market and believes that the Montviel deposit, with the largest bastnaesite type mineralization 43-101 resource estimate in North America, could demonstrate solid economics based on its proprietary technology even at current market pricing.

The Corporation continues to gradually optimize and improve the flow sheet. With the additional funding from the MERN and the private placement announced on February 9, 2022, a project was started to improve on the technology that was developed and patented in 2015 (see news releases from April 29, 2015, May 20, 2015 and June 11, 2020) by incorporating the knowledge and experience gained from developing the rare earth recycling project and the bauxite residues project since then.

The main technical objectives to be investigated in this project are:

- Eliminating the flotation circuit
- Valorization of the iron by-product
- Recycling of the main leaching reagents

The successful implementation of these objectives would simplify the process of extracting rare earths and niobium and could significantly reduce its operating costs. The economic benefits of this project include:

- Cost reduction of the chemical reagents
- Energy savings by avoiding very fine grinding that is required for flotation, solid heat recovery and other adjustments
- Improving total REE recovery through whole ore leaching
- Reduction of mining waste and tailings management costs
- Increase of potential revenues through various by-products

Furthermore, the social and environmental impacts of the project are similarly important and will help obtain the required permits in the future and support of the local communities and the Waswanipi CREE First Nation. The environmental benefits of this project include:

- Reduction of water consumption
- Reduction of liquid effluents
- Reduction of solid mining waste volumes
- Reduction of overall energy consumption and greenhouse gas emissions for REE production compared to previous flowsheet
- Further evaluation of the possibility of paste-backfill

These modifications keep improving the process and making the Montviel project more economically robust, less sensitive to REO price fluctuations and more environmentally friendly by closing the processing loop.

The results of the project will be used to complete a Preliminary Economic Assessment (PEA) on the Montviel deposit.

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### 5. RESEARCH AND DEVELOPMENT ACTIVITIES

#### 5.1 Expenses Summary

	Three months ended November 30		Six months ended November 30	
	2024	2023	2024	2023
	\$	\$	\$	\$
Salaries and benefits	246,564	281,148	472,009	522,657
Share-based compensation	24,483	2,202	50,743	5,516
Professional fees	10,410	43,669	34,136	354,038
Material and furniture	179,795	1,810	198,038	71,829
General and administration	7,332	42,569	53,446	70,242
Depreciation of property, plant and equipment	53,402	26,366	106,541	43,696
Impairment of property, plant and equipment	-	1,724	1,252	2,672
<b>Total R&amp;D expenses</b>	<b>521,987</b>	<b>399,488</b>	<b>916,164</b>	<b>1,070,650</b>
Tax credits	(165,463)	-	(21,944)	(52,811)
<b>Net R&amp;D expenses</b>	<b>356,524</b>	<b>399,488</b>	<b>894,220</b>	<b>1,017,839</b>

#### 5.2 Rare Earths Recycling Technology Development

Dr. Pouya Hajjani, process inventor, engineer and CTO of Geomega supervised and approved the technical information of this section.

Geomega develops innovative technologies for extraction and separation of rare earth elements and other critical metals essential for a sustainable future. With a focus on renewable energies, vehicle electrification, automation, reduction in greenhouse gas emissions and energy usage, rare earth magnets or neo-magnets (NdFeB) are at the center of all these technologies. Geomega's strategy revolves around gradually de-risking its innovative technologies while working directly with the main players in these industries to recycle the magnets that power all those technologies.

Geomega has been advancing engineering towards the construction of the demonstration plant that will be using its technology to recycle rare earth magnets and produce rare earth oxides. On October 1st, 2019, the Corporation published the results of the Front-End Engineering & Design ("FEED") study. The updated batch design was scaled up in order to operate on a single work shift of 8 to 10 hours. As a result of this sizing increase and process optimization by Geomega, the demonstration plant could reach a throughput capacity of 1.5 ton per shift, a 50% increase over the initial design. On a per hour basis, this demonstrated a 4.5X increase.

That engineering work confirmed that the processing technology that was developed by Innord, a subsidiary of Geomega, is technically feasible and uses off the shelf equipment thereby making it easier to scale up.

In September 2020, the Corporation provided updated capital costs (including working capital) for the demonstration plant which increased from \$3.2M to \$4.8M. Although the equipment cost remained the same as what was presented in the FEED study, the Corporation revised upwards the estimate for plant construction and for the remaining cost of engineering.

The Corporation published the positive results of the pilot tests in January 2021 and an engineering update was provided in July 2021. Work was progressing by both external and inhouse engineers on detailed engineering. In fall 2021, the Corporation began hiring additional senior engineers in various disciplines to accelerate the work and to become fully independent of external engineering firms for process engineering.

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### 5. RESEARCH AND DEVELOPMENT ACTIVITIES (CONT'D)

In March 2022, the Corporation published the initial layout of the rare earths recycling demonstration plant to be located in Saint-Bruno-de-Montarville, Quebec. Following the decision in April 2023 to move the demonstration plant to Saint-Hubert, a layout redesign was initiated. A baseline environmental study has been performed at the Saint-Hubert facility including the installation of 3 monitoring water wells around the site.

With an expanded team of engineers since the end of 2021, Geomega advanced on many aspects of the engineering such as process design for the batch process plant, equipment and packages, auxiliary items, layout and more. Equipment ordering began in May 2022 while the external engineering firm BBA was engaged in December 2022 to complete the final phase of detailed engineering and pre-construction activities. From May 2023 to January 2024, work focused on process and layout adjustments for the Saint-Hubert facility. The updated plant 3D layout reached around 80% completion. Various equipment were purchased and received and several Factory Acceptance Tests (FAT) performed.

As of September 2023, the team has been dedicated to bringing engineering to a sufficient level of completion that it could be tendered to the construction contractors for execution and completion of the rare earths recycling demonstration project. Procurement also progressed and various items were ordered while others were received at the Saint Hubert facility during this period. In parallel, permitting activities have been ongoing at both the municipal and provincial levels. The objective was to be able to start the construction activities in February 2024. As a result of providing all the requested data to the governmental authorities, Geomega was notified by the municipality of Saint-Hubert, that the sewer system capacity is not currently able to accommodate the water discharges from the cooling tower that was to be installed for the demonstration plant. After reviewing various potential solutions, Geomega had to undertake a design change from batch process to continuous 24 hours operation with smaller equipment and lower demand for utilities, most importantly in regard to the cooling requirements. Despite the design change, the demonstration plant throughput capacity is planned to remain unchanged at 1.5 tonnes of feed material per day. More details on the design change, including the advantages and the risks are presented in the [March 19, 2024 press release](#).

Following a thorough review of the required construction activities and the ongoing design change, the engineering team was able to select several items that were not being impacted by the design change to continuous operation. Geomega has secured the services of a local construction company that started executing the required work in March 2024 while process engineering for the continuous plant design was being done in parallel to the required civil engineering. The majority of the civil work on site was completed by January 2025.

The most recent update can be found in section 2.4 above.

### 5.3 Bauxite Residue Valorization Technology Development

Large quantities of this caustic red mud are generated worldwide every year, posing environmental and safety challenges. Storage of bauxite residues is a challenge for alumina refineries with over 80 plants across the world currently producing alumina from bauxite ore. It is estimated that over 1.5 million tonnes of bauxite residues are generated every year and as the demand for aluminum metal increases so does the production of bauxite residues. As a result of population growth, many of these plants are now located inside urban areas resulting in storage space limitations and increasing environmental regulations that threaten these operations. Closure of these alumina refineries could result in the loss of thousands of jobs and millions of dollars of economic benefits for these regions. With over 4 billion tonnes of BR stored in tailings globally, this feed material represents potential \$400B in metal value that could be unlocked using Innord's technology.

# Geomega Resources Inc.

## Management Discussion & Analysis – Quarterly Highlights

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### 5. RESEARCH AND DEVELOPMENT ACTIVITIES (CONT'D)

Geomega believes that BR is a perfect fit to expand Innord's extraction technology. Drawing from the strengths and versatility of its technology, Innord had been seeking to identify large industrial and mining waste challenges with the following characteristics:

- High iron (Fe) content – in BR >40% Fe<sub>2</sub>O<sub>3</sub>
- Loss of critical and strategic metals in the tailings (rare earth elements, scandium, gallium, titanium and vanadium)
- Need for reagents recycling and tailings volume reduction

Ownership of the Intellectual Property developed by Innord through this research work will remain with the Corporation. With BR representing a global challenge, Innord is developing the technology with the objective to make it available globally through a licensing / royalty structure once the technology has demonstrated its economical and environmental feasibility on a larger scale.

Bench scale testwork on the BR technology began in 2020. Funding from industrial partners and governmental grants in 2021 helped complete the initial bench scale work and bring the project towards piloting. On March 31, 2021, Geomega announced a \$4M funding for a 24-month pilot plant and feasibility study of its sustainable and complete valorization of BR processing technology. The project was funded by Rio Tinto, SDTC, Quebec Government and Geomega. The pilot project is to demonstrate the scalability of the technology while testing and validating various technical parameters before completing a feasibility study.

On April 25, 2022, in parallel to the BR technology, Rio Tinto and Innord have agreed to begin evaluating various opportunities to monetize the iron compounds produced by Innord's Bauxite Residues Technology (IBRT). As part of the 12 months project, Innord has committed to develop and test an extension technology to IBRT to produce the desired product that will then be evaluated by Rio Tinto. The Intellectual property developed only from this project extension will be owned by Rio Tinto who is fully funding the project. Innord will receive a royalty payment for the underlying base technology (IBRT) upon commercialization of the technology and any production of commercial products. Details of the agreement between Geomega and Rio Tinto, including the royalty level, will remain confidential.

Relative to existing methods (less than 5% of global BR is being used today) and contrary to previously developed metallurgical approaches that either only displace the environmental impact towards effluents and/or other residues, provide insufficient volume reduction or have limited economic viability, Innord's process potentially offers the following benefits:

- Significant tailings volume reduction (>80%)
- Minimize effluents by recycling the main reagents, which would in turn reduce operating costs and avoid creating other waste streams
- Value maximization of the available metals, thereby enhancing the economics of the process, which include:
  - Bulk traditional metals such as Al and Fe
  - Strategic metal concentrates (REE, Sc, Ti, V)

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### 5. RESEARCH AND DEVELOPMENT ACTIVITIES (CONT'D)

Bench scale lab work continued to investigate more paths to monetize diverse streams of products throughout 2022 and 2023. Layout and equipment selection for the initial phase of the pilot plant covering the core of the transformation process was performed in late 2022 and in 2023. Installation began in January 2023 and commissioning began in August 2023 with Figure 1 and 2 showing the pilot plant at the Boucherville facility. Since then, progressive commissioning, testing and pilot operation has been ongoing and will continue until the entire technology is demonstrated at the pilot scale. Product samples are collected as needed for end user and overall technology validation. The continuous pilot plant delivered kilograms of material of the main product as was required for testing by end users. In parallel to the pilot operation, Geomega continues testing the technology on other bauxite residues from around the world to demonstrate the technology's versatility.

The most recent update can be found in section 2.5 above.



Figure 1: [Pilot plant setup at the Boucherville facility](#)

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## 5. RESEARCH AND DEVELOPMENT ACTIVITIES (CONT'D)



Figure 2: [Pilot plant setup at the Boucherville facility](#)

January 28, 2025

*(s) Kiril Mugerman*  
\_\_\_\_\_  
Kiril Mugerman  
President and CEO

*(s) Mathieu Bourdeau*  
\_\_\_\_\_  
Mathieu Bourdeau  
CFO

# Geomega Resources Inc.

## Management Discussion & Analysis- Quarterly Highlights

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### **Management**

Kiril Mugerma, President & CEO  
Mathieu Bourdeau, CFO  
Pouya Hajiani, CTO

### **Board of directors**

Gilles Gingras, President of the Audit Committee <sup>1)</sup>  
Kosta Kostic <sup>2)</sup>  
Matt Silvestro, President of the Governance Committee <sup>1) 2)</sup>  
Nick Nickoletopoulos <sup>1) 2)</sup>  
Kiril Mugerma

#### *Notes:*

- 1) Member of the Audit Committee*
- 2) Member of Corporate Governance, Nomination and Compensation Committee*

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