



Management's Discussion and Analysis

For the Three and Nine Months Ended September 30, 2024

NORTHSTAR CLEAN TECHNOLOGIES INC.

Management’s Discussion and Analysis

September 30, 2024

DESCRIPTION OF BUSINESS AND OVERVIEW OF OPERATIONS AND FINANCIAL CONDITION

The following is management’s discussion and analysis (“MD&A”), prepared as of November 28, 2024. This MD&A should be read in conjunction with the audited Annual Consolidated Financial Statements for the year ended December 31, 2023 and the accompanying notes, all as prepared in accordance with International Financial Reporting Standards (“IFRS”). All amounts are stated in Canadian dollars unless otherwise indicated.

Forward Looking Statements

This report includes certain statements that may be deemed “forward-looking statements” within the meaning of applicable securities legislation. All statements, other than statements of historical facts that address such matters as future events or developments that the Company expects, are forward-looking statements and, as such, are subject to risks, uncertainties, assumptions and other factors of which are beyond the reasonable control of the Company. You can identify these statements by forward-looking words such as “expects”, “does not expect”, “plans”, “anticipates”, “does not anticipate”, “believes”, “intends”, “estimated”, “projects”, “potential”, “scheduled”, “forecast”, “budget”, and similar expressions, or that events or conditions “will”, “would”, “may”, “could”, “should” or “might” occur and similar words. Such statements give the Company’s current expectations or forecasts of future events and are not guarantees of future performance and actual results or developments may differ materially from those expressed in, or implied by, this forward-looking information. With respect to forward-looking statements and information contained herein, we have made numerous assumptions including among other things anticipated costs and expenditures and the Company’s ability to achieve its goals. Although management believes that the assumptions made and the expectations represented by such statements or information are reasonable, there can be no assurance that a forward-looking statement or information herein will prove to be accurate. Forward-looking statements and information by their nature are based on assumptions and involve known and unknown risks, uncertainties and other factors which may cause our actual results, performance or achievements, or industry results, to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements or information. Factors that could cause actual results to differ materially from those in forward-looking statements include, for example, such matters as continued availability of capital and financing and general economic, market or business conditions. Although we have attempted to identify factors that would cause actual actions, events or results to differ materially from those disclosed in the forward-looking statements or information, there may be other factors that cause actual results, performances, achievements or events not to be anticipated, estimated or intended. Accordingly, readers should not place undue reliance on forward-looking statements or information. Any forward-looking statements are expressly qualified in their entirety by this cautionary statement. The information contained herein is stated as of the current date and subject to change after that date and the Company does not undertake any obligation to update publicly or to revise any of the forward-looking statements, whether as a result of new information, future events or otherwise, except as may be required by applicable securities laws.

Description of Business

Northstar Clean Technologies Inc. (“Northstar” or the “Company”) is a Canadian-based clean technology company focused on the sustainable recovery and reprocessing of asphalt shingles. Northstar has developed a proprietary design process for taking discarded asphalt shingles, otherwise destined for already over-crowded landfills, and extracting the liquid asphalt for use in new hot mix asphalt, shingle manufacturing and asphalt flat roof systems, and aggregate and fibre for use in construction products and other industrial applications. Focused on the circular economy, Northstar plans to reprocess used or defective asphalt shingle waste back into its three primary components for reuse/resale at its first commercial scale up facility in Calgary, Alberta (the “Empower Calgary Facility”). As an emerging innovator in sustainable processing, Northstar’s mission is to be the leader in the recovery and reprocessing of asphalt shingles in North America, extracting the recovered components from asphalt shingles that would otherwise be sent to landfill.

Northstar has developed a proprietary design process known as the Bitumen Extraction & Separation Technology (“BEST”) technology, to break down the components of single-use asphalt shingles that would otherwise be sent to a landfill, into market quality products. The component parts of an asphalt shingle are approximately 50% aggregate, 25% fibre and 25% liquid asphalt (the “Products”). Once reprocessed, the Products can be used in a variety of applications, including road asphalt, new asphalt shingle manufacturing, construction products, and other industrial applications. The Company hopes to be able to sell these components to paving companies, cement companies, roofing companies, shingle manufacturers and other industrial and construction product manufacturers, who may benefit from a supply of low carbon, reprocessed products. The Company’s proprietary process was developed over the last decade with technical and scientific assistance from the United Kingdom and

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Alberta. The Company plans to reprocess used and defective asphalt shingles into their component parts for reuse/resale and thereby seeks to eliminate their disposal in landfills.

The Company listed its common shares on the TSX-V and began publicly trading on the TSX-V under the symbol 'ROOF' on July 13, 2021. On January 11, 2022, the Company's common shares commenced trading on the OTCQB Venture Market (the "OTCQB") under the ticker symbol 'ROOOF'.

The head office and principal address of the Company is located at 1110-396 11th Ave SW, Calgary, Alberta, T2R 0C5. The Company's registered and records office is also located at 7046 Brown Street, Delta, British Columbia, Canada, V4G 1G8.

Outlook and growth strategy

As an emerging innovator in sustainable processing, Northstar's mission is to be the leader in the recovery and reprocessing of asphalt shingles in North America, extracting the recovered components from asphalt shingles that would otherwise be sent to landfill. The Company completed the Empower Pilot Facility in Delta, BC and is in the development and construction stage for advancing its Empower Calgary Facility in Calgary, AB.

Empower Pilot Facility – Delta, BC

The Empower Pilot Facility is located at 7046 Brown Street in Delta, British Columbia. The Empower Pilot Facility is located on a 4.23 acre property with a 20,000 square foot building. The site of the Empower Pilot Facility has a large yard for storage and collection of asphalt shingles, and is conveniently located for roofing companies, roofing contractors, and waste haulers throughout the Metro Vancouver area. The Company has leased the Empower Pilot Facility and surrounding lands pursuant to the Empower Lease for a period of five years from January 1, 2021 with an option to extend for an additional five years.

In 2022, the production from the Empower Pilot Facility delivered significant results in several key areas:

1. The production proved the Company's proprietary BEST technology with shingle feedstock processed into aggregate, fibre and asphalt.
2. The process enabled the supply of Products to potential customers for detailed testing, research & development. This testing helped secure the long-term offtake agreement for the Empower Calgary Facility and allowed subsequent successful testing with a number of shingle and flat roof manufacturers. Importantly, the testing results supported the Company's view that the asphalt produced by the BEST technology may be suitable for all three target market sectors of road paving, asphalt shingle manufacturing and flat roof manufacturing.
3. The production of Products generated valuable feedback for the design of the Empower Calgary Facility from customers, vendors and from the production process itself. The feedback is being incorporated into the detailed design process, which commenced in Q4 2023, as part of the integrated facility design led by the Company's engineering contractor, BBA Engineering Ltd. ("BBA"). In the Company's view, the feedback, derived from operations at the Empower Pilot Facility, helps de-risk the Empower Calgary Facility design.

Given the success of detailed testing, research & development activities described above, the Company through 2024 will focus resources, including manpower and capital, on the Empower Calgary Facility. Short term, the Company plans to operate the Empower Pilot Plant Facility as a testing facility that is focused on R&D and product testing. Upon successful completion of the Empower Calgary Facility the Company plans to retrofit and develop a commercial facility at the same location as the Pilot Facility.

Empower Calgary Facility – Calgary, AB

The Empower Calgary Facility will be the Company's first commercial scale up facility located in Rocky View County, a municipal district adjacent to the City of Calgary, Alberta. The Empower Calgary Facility is currently under construction, will be the Company's first modular scale up facility and is expected to be designed and engineered with an estimated capacity of 150–200 tonnes per day. The Empower Calgary Facility's build and design are part of the Company's planned national roll out and expansion strategy to operate asphalt shingle reprocessing facilities across Canada and the United States. As of February 2023, Northstar's wholly owned subsidiary Empower Environmental Solutions Calgary Ltd. signed a long-term land lease agreement with for the industrial-zoned property of 3.98 acres in Rocky View County, Alberta. The lease is for an initial term of 15 years, with two extension options of five years each.

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On October 6, 2022, Northstar announced the execution of a term sheet with McAsphalt Industries ("McAsphalt") for a 5-year (with automatic 3-year renewal options) take-or-pay offtake agreement whereby McAsphalt, will purchase, on an exclusive basis, 100% of the asphalt production from the Empower Calgary Facility. Subsequent to the announcement of the term sheet, Northstar announced the execution of an offtake agreement with McAsphalt. Key commercial terms of the offtake agreement remain unchanged from the original McAsphalt offtake term sheet.

As at the date of this MD&A the Company is continuing with construction of the Empower Calgary Facility.

SIGNIFICANT QUARTERLY DEVELOPMENTS

- During the quarter, the Company continued to develop and construct the Empower Calgary Facility which included completing procurement, arrival and testing of equipment in preparation for installation and continuing with shingle collection in preparation for facility commissioning and operation.
- On July 15, 2024, Northstar was issued a patent for the Company's front-end technology for reprocessing asphalt shingles from the Canadian Intellectual Property Office. The Patent is expected to remain in force until 2042. Further, Northstar has a pending Patent Cooperation Treaty ("PCT") application which preserves the right to file a patent application in any of the 157 PCT contracting states. The Patent application was previously granted fast track status, as announced by the Company on February 14, 2023.
- On September 12, 2024 the Company completed its first draw of approximately \$1.6 million under its \$8.75 million non-revolving senior secured debt facility (the "BDC Facility") with the Business Development Bank of Canada ("BDC"), previously announced by the Company on July 7, 2023, for the planned asphalt shingle reprocessing facility in Calgary, Alberta (the "Empower Calgary Facility"). The Company has satisfied all conditions precedent to draw on the BDC Facility. The Company expects to continue drawing down the BDC Facility as the Empower Calgary Facility progresses through to completion.
- On September 16, 2024, the Company closed a royalty transaction with CVW CleanTech Inc. ("CVW CleanTech"), pursuant to which CVW CleanTech provided Northstar with \$14.0 million in funding through a five-year 10.0% second secured convertible debenture (the "Royalty Debenture") convertible into revenue royalties on two Northstar facilities. Upon the achievement of certain production milestones, the Royalty Debenture will convert the full principal of the Royalty Debenture into two, equal royalty interests in the next two of Northstar's planned asphalt shingle reprocessing facilities ("Empower 3" and "Empower 4") after the Empower Calgary Facility. The royalty interests and their respective royalty rates would be subject to adjustment for capitalized or accrued and unpaid interest, if any.

Subsequent to Q3 2024

- Construction of the Empower Calgary Facility continued with pouring of the facility foundation, roof and wall installation, a number of major pieces of equipment were installed and testing and equipment deliveries continued to the site.
- On November 15, 2024 the Company received \$2.7 million under its senior secured debt facility BDC, bringing the total amount outstanding to \$4.3 million as of the date of this report.

PERFORMANCE SUMMARY

The following is a summary of the significant transactions that occurred during the period ended September 30, 2024 and for the previous period to the report:

- (a) During the three months ended September 30, 2024
 - the Company's additions to property, plant and equipment constituted \$6,469,877.
 - the Company completed its first draw of approximately \$1,600,000 under its \$8,750,000 BDC Facility.
 - the Company entered into a definitive agreement raising \$14,000,000 in funding through a five-year 10.0% Royalty Debenture convertible into revenue royalties on two Northstar facilities.
 - the Company issued 213,571 common shares to employees for equity settled restricted stock units ("RSUs"), and 720,804 common shares to employees for equity settled performance stock units ("PSUs").

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- the Company issued 791,282 RSUs and 2,625,002 options to certain directors, officers, employees and consultants of the Company.
- (b) During the three months ended June 30, 2024:
- the Company’s additions to property, plant and equipment constituted \$4,094,208.
 - the Company received Emissions Reduction Alberta (“ERA”) approval for the Company’s submission related to the first milestone following, among other criteria completed, the completion of 75% of detailed engineering and design for the Empower Calgary Facility. As a result of ERA’s approval, the payment for the first milestone in the amount of \$1,340,722 had been received by the Company.
 - the Company closed a non-brokered private placement of unsecured convertible debenture units of \$4,705,000.
 - the Company issued 247,213 common shares to employees for equity settled RSUs, and 474,939 common shares to employees for equity settled PSUs.

SUMMARY OF QUARTERLY RESULTS

	September 30, 2024	June 30, 2024	March 31, 2024	December 31, 2023
Total assets	\$ 36,949,134	\$ 20,683,139	\$ 17,909,998	\$ 17,875,045
Property, plant and equipment	15,694,999	9,348,796	6,666,930	5,040,686
Working capital	9,794,657	3,446,112	3,440,770	5,170,113
Shareholders’ equity	1,199,210	4,244,205	4,238,202	5,437,397
General and administrative expenses	1,473,856	1,448,114	1,543,883	1,804,045
Loss and comprehensive loss	(3,207,180)	(1,375,777)	(1,581,578)	(1,887,706)
Basic and diluted loss per share	(0.03)	(0.01)	(0.01)	(0.02)

	September 30, 2023	June 30, 2023	March 31, 2023	December 31, 2022
Total assets	\$ 17,013,792	\$ 6,703,697	\$ 6,019,542	\$ 6,829,057
Property, plant and equipment	3,135,979	3,103,004	3,210,572	3,286,540
Working capital (deficit)	6,632,707	(305,037)	(1,428,964)	(419,585)
Shareholders’ equity	6,756,306	2,373,552	1,323,233	2,784,507
General and administrative expenses	1,325,768	1,370,444	1,344,230	1,847,358
Loss and comprehensive loss	(1,399,574)	(1,696,078)	(1,688,596)	(2,267,507)
Basic and diluted loss per share	(0.01)	(0.01)	(0.02)	(0.03)

Results of Operations

The following discussion addresses the operating results of the Company for the three and nine months ended September 30, 2024, compared with the three and nine months ended September 30, 2023.

For the Three Month Period Ended September 30, 2024:

Loss and comprehensive loss for the period

The Company had a loss and comprehensive loss for the three month period ended September 30, 2024, of \$3,207,180 (September 30, 2023 - \$1,399,574). The net increase of \$1,807,606 in the loss and comprehensive loss for the three month period ended September 30, 2024 compared to the three month period ended September 30, 2023 was mainly due to one time transaction costs of \$986,239 related to the Royalty Debenture issued during the quarter, an increase in interest and financing charges of \$461,234 and an increase in general and administrative expense of \$148,088. The changes in operations, other items, research and development expenses, and general and administrative expenses are noted below.

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During the three month period ended September 30, 2024, the Company reported a loss from operations of \$38,097 (September 30, 2023 - income of \$63,634). The loss was due to timing associated with shingle collection costs during shingle collection startup at the Empower Calgary Facility which commenced during the year as the Company prepares for commissioning and operations. During the previous year's comparable quarter, shingles were collected only at the Company's Empower Pilot Facility which ceased prior to the current quarter.

Other items

During the three month period ended September 30, 2024 the Company reported transaction costs of \$986,239 related to the issuance of a Royalty Debenture during the quarter (September 30, 2023 - \$Nil), a loss on the fair value re-measurement of \$70,000 related to the Royalty Debenture (September 30, 2023 \$Nil), an increase in interest and financing charges of \$461,234 associated with an \$8,340,000 increase in convertible debentures quarter over quarter, plus a foreign exchange loss of \$11,349 (September 30, 2023 – gain of \$200,775) which was mostly unrealized and relates to US dollars held by the Company.

Research and development expenses

During the three month period ended September 30, 2024, the Company reported research and development expenses of \$Nil compared to \$173,971 for the three month period ended September 30, 2023. Research expenses decreased as the Company transitioned away from research activities at the Empower Pilot Facility to developing the Empower Calgary Facility.

General and administrative expenses

General and administrative expenses of \$1,473,856 (September 30, 2023 - \$1,325,768) are primarily comprised of wages, benefits and director fees, depreciation and amortization, rent, utilities and site costs, and advertising, marketing and investor relations activities. The net increase was \$148,088 compared to the three month period ended September 30, 2023.

Items significantly influencing the net increase are noted in the following in comparison to the three month period ended September 30, 2023 (the "comparative quarter"):

- Wages and benefits of \$593,464 (September 30, 2023 - \$418,124) increased by \$175,340 due to staff increases as the Company develops and constructs the Empower Calgary Facility.
- Rent, utilities and site costs of \$135,454 (September 30, 2023 - \$94,844) increased by \$40,610 due to the inclusion of Empower Pilot Facility site costs which are no longer presented as research expenses since the Company exited the research phase.
- Advertising and investor relations of \$104,039 (September 30, 2023 - \$70,345) increased by \$33,694 related to increased marketing efforts across Canada and the US as the Company develops and constructs the Empower Calgary Facility.
- Share-based compensation of \$86,884 (September 30, 2023 - \$168,853) decreased by \$81,969 due to the vesting of the stock options, restricted stock units ("RSUs"), and performance stock units ("PSUs") on historical issuances.

For the Nine Month Period Ended September 30, 2024:

Loss and comprehensive loss for the period

The Company had a loss and comprehensive loss for the nine month period ended September 30, 2024 of \$6,164,535 (September 30, 2023 - \$4,784,129). The net increase of \$1,380,406 in the loss and comprehensive loss for the nine month period ended September 30, 2024 compared to the nine month period ended September 30, 2023 was mainly due to an increase in interest and financing charges of \$991,795, one time transaction costs of \$986,239 related to the Royalty Debenture issued during the period, and an increase in general and administrative expense of \$425,410, offset by a decrease in research and development expense of \$747,445 as the Company transitioned from research activities into development and construction of the Empower Calgary Facility. As the Company prepares for construction completion and commissioning at the Calgary location, increased shingle collection activity also increased the net loss and comprehensive loss for the period by \$11,746. The changes in operations, other items, research and development expenses, and general and administrative expenses are noted below.

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Operations

During the nine month period ended September 30, 2024, the Company reported income from operations of \$130,093 (September 30, 2023 - \$141,839). The net decrease of \$11,746 was impacted by shingle collection costs at the Empower Calgary Facility. During the previous year's comparable period, shingles were collected only at the Company's Empower Pilot Facility which ceased during the nine months ended September 30, 2024.

Other items

During the nine month period ended September 30, 2024, the Company reported interest and financing charges of \$1,416,068 (September 30, 2023 - \$424,273). The increase of \$991,795 was associated with an increase in interest expense due to an \$8,340,000 increase in convertible debentures year over year, transaction costs of \$986,239 related to the issuance of a Royalty Debenture incurred during the period (September 30, 2023 - \$Nil) and a loss on the fair value re-measurement of \$70,000 related to the Royalty Debenture (September 30, 2023 - \$Nil).

Research and development expenses

During the nine month period ended September 30, 2024, the Company reported research and development expense of \$Nil compared to \$747,445 for the nine month period ended September 30, 2023. Research expenses decreased as the Company transitioned away from research activities at the Empower Pilot Facility to developing the Empower Calgary Facility.

General and administrative expenses

General and administrative expenses of \$4,465,853 (September 30, 2023 - \$4,040,443) are primarily comprised of wages, benefits, and director fees, depreciation and amortization, rent and utilities, and share-based compensation expenses. The net increase was \$425,410 compared to the nine month period ended September 30, 2023.

Items significantly influencing the net increase are noted in the following in comparison to the nine month period ended September 30, 2023 (the "comparative period"):

- Wages and benefits of \$1,617,075 (September 30, 2023 - \$1,441,668) increased by \$175,407 due to staff increases as the Company develops and constructs the Empower Calgary Facility.
- Depreciation and amortization of \$963,480 (September 30, 2023 - \$783,114) increased by \$180,366 due to an increase in right of use asset depreciation related to Empower Calgary Facility's lease which commenced in Q3 2023.
- Rent, utilities and site costs of \$492,215 (September 30, 2023 - \$294,757) increased by \$197,458 due to an increase in the Empower Calgary Facility variable rent as the Company commenced a land lease in Q3 2023 and Empower Pilot Facility site costs which are no longer presented as research expenses as the Company exited the research phase.
- Advertising, marketing and investor relations of \$305,385 (September 30, 2023 - \$208,361) increased by \$97,024 due to an increase in market presence across Canada and the US.

LIQUIDITY AND CAPITAL RESOURCES

The Company's development of asphalt processing activities has been funded to date primarily through the issuance of common shares, convertible debenture financings, royalty debenture financings and government grants. Other than as discussed herein, the Company is not aware of any trends, demands, commitments, events or uncertainties that may result in its liquidity either materially increasing or decreasing at present or in the foreseeable future. Material increases or decreases in the Company's liquidity will be substantially determined by the success or failure of its commercialization of a proprietary process technology for the reprocessing of asphalt shingles and the extraction and recovery of asphalt, fibre and aggregate to be sold and used in asphalt pavement, shingle manufacturing, construction products, and other industrial applications, as well as its continued ability to raise capital.

During the nine month period ended September 30, 2024, the Company issued a total of \$6,080,000 in unsecured convertible debentures, received \$1,600,000 under its BDC Facility, issued a \$14,000,000 five-year 10.0% second secured convertible Royalty Debenture convertible into revenue royalties on two Northstar facilities described below and received \$1,340,722 from ERA.

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On September 12, 2024, the Company closed a royalty transaction, pursuant to which CVW CleanTech provided the Company with a total of \$14.0 million in funding through a five year 10% second secured convertible Royalty Debenture convertible into revenue royalties on two future facilities. Upon the achievement of certain volume and financial milestones, the balance outstanding will convert into two equal royalty interests in the next two of Northstar's planned asphalt shingle reprocessing facilities after the Empower Calgary Facility.

The Company anticipates spending significant capital resources on the development and construction of its Empower Calgary Facility which is estimated to have a direct capital cost of \$17,500,000, of which, approximately \$16,700,000 was committed and \$13,000,000 had been incurred as at September 30, 2024. As of the date of this MD&A the Company's estimate of the capital cost has not materially changed. After the Empower Calgary Facility has been built, management is expecting that each additional facility constructed afterward will cost less than the cost to construct the Empower Calgary Facility due to one-time costs incurred during the development of the Empower Calgary Facility such as engineering detailed design.

To fund the development and construction of its Empower Calgary Facility, the Company, in addition to financing transactions completed during the nine month period and cash of \$15,551,137 as of September 30, 2024, has a senior secured debt facility with BDC for \$8,750,000 (of which \$4,305,618 has been drawn by the Company to date, including \$2,705,618 drawn subsequent to the end of the quarter) and a government grant from ERA in the amount of \$7,088,856 (of which \$1,340,722 has been received by the Company to date). In addition, the Company is supplementing construction funding with tipping fees charged on roofing shingles received from IKO and Ecco Recycling which began during 2024.

Drawing on the remaining BDC Facility and ERA grant are subject to achieving a number of conditions precedent and milestones. In Q1 2024, the Company achieved detailed engineering design which, among other criteria, was required to receive ERA Milestone 1 payment in the amount of \$1,340,722 which was approved by ERA and received by the Company in April 2024. During the nine month period ended September 30, 2024, the Company satisfied all conditions precedent to draw on the BDC Facility. Two draws totalling \$4,305,618 has been received by the Company to date.

Proceeds received from the Royalty Debenture will be used for working capital requirements and general corporate purposes, expected to include business development to support future site selection and facility build-out.

The Company assesses its financing requirements and its ability to access equity or debt markets on an ongoing basis. The assessment considers: the stage and success of the Company's evaluation and execution activities to date, the continued participation of the Company's partners in evaluation activities and financial market conditions. It is possible that future economic events and global conditions may result in further volatility in the financial markets which could negatively impact the Company's ability to access equity or debt markets in the future.

Net cash used in operating activities for the nine month period ("period") ended September 30, 2024 was \$3,435,319 compared to \$3,310,214 for the nine month period ended September 30, 2023, consisting primarily of the operating loss for the period and offset by a decrease in non-cash working capital items.

Net cash used in investing activities for the period ended September 30, 2024, was \$8,829,412 compared to \$335,828 during the period ended September 30, 2023. The change consisted of cash used for the acquisition of property, plant and equipment of \$9,807,534 (September 30, 2023 - \$212,017), the acquisition of intangible assets of \$37,012 (September 30, 2023 - \$12,110), proceeds from government grants on property, plant and equipment of \$1,389,738 (September 30, 2023 - \$Nil), and non-current deposits paid \$374,604 (September 30, 2023 - \$111,701).

Net cash provided by financing activities for the period ended September 30, 2024 was \$19,994,192 compared to \$10,875,816 during the period ended September 30, 2023 which consisted of \$5,822,672 from the issuance of convertible debentures net of issuance costs (September 30, 2023 - \$618,900) and \$13,769,235 from the issuance of a royalty debenture net of issue costs (September 30, 2023 - \$Nil), offset by \$697,559 in repayments of lease liabilities (September 30, 2023 - \$479,589), \$348,358 in interest paid on convertible debentures (September 30, 2023 - \$103,250), \$60,175 in loan repayments (September 30, 2023 - \$91,050), deferred costs of \$5,442 (September 30, 2023 - \$131,250), and cash-settled PSUs and RSUs paid-out of \$28,281 (September 30, 2023 - \$Nil). No proceeds were received during the period ended September 30, 2024 from issuance of common shares or preferred shares (September 30, 2023 - \$11,062,055 net of issuance costs).

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OFF-BALANCE SHEET ARRANGEMENTS

The Company has not entered into any off-balance sheet transactions.

RELATED PARTY TRANSACTIONS

- (a) As at September 30, 2024, accounts payable and accrued liabilities include \$932,115 (December 31, 2023 - \$672,690) owing to key management personnel. The amounts are unsecured, non-interest bearing and due on demand.
- (b) Key management personnel include those persons having authority and responsibility for planning, directing and controlling the activities of the Company as a whole. During the years presented the Company paid or accrued the following key management personnel compensation to directors, officers, and/or companies controlled by directors and officers and/or companies with certain directors in common:

	Three months ended September 30, 2024	Three months ended September 30, 2023	Nine months ended September 30, 2024	Nine months ended September 30, 2023
Advertising, marketing and promotion	\$ 18,378	\$ 15,000	\$ 18,378	\$ 48,750
Share-based compensation	66,638	157,546	274,828	288,154
Wages, benefits and director fees	428,912	262,328	1,042,650	986,602
	\$ 513,928	\$ 434,874	\$ 1,335,856	\$ 1,323,506

- (c) During the year ended December 31, 2021, the Company acquired equipment in the amount of \$270,000 plus GST and PST from a company with certain controlled by a former officer of the Company.
- (d) During the period ended September 30, 2024, the amount of \$350,000 (December 31, 2023 - \$325,000) was received in convertible debenture proceeds by officers or directors of the Company.
- (e) During the period ended September 30, 2024, the Company issued 1,088,591 (December 31, 2023 - 401,757) common shares to key management personnel for equity-settled RSUs and PSUs for 249,499 and 839,092 common shares, respectively (December 31, 2023 – for 92,712 and 309,045 common shares, respectively).

COMMITMENTS

Lease Commitments

Calgary

Northstar’s wholly owned subsidiary, Empower Environmental Solutions Calgary Ltd., negotiated a lease for the planned scale up facility in Rocky View County, near Calgary, Alberta effective August 18, 2023 for an initial term of 15-years with an option to extend for two additional 5-year terms.

The basic annual rents are as follows:

- from August 18, 2023 to August 17, 2028 - \$346,516 per annum
- from August 18, 2028 to August 17, 2033 - \$381,168 per annum
- from August 18, 2033 to August 17, 2038 - \$419,284 per annum

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Delta

Northstar's wholly owned subsidiary, Empower Environmental Solutions Ltd., has a 5-year lease for the pilot facility in Delta, BC, which expires December 2025, but has a 5-year renewal option. The basic annual rents remaining are as follows:

- from January 1, 2023 to December 31, 2024 - \$583,563 per annum
- from January 1, 2025 to December 31, 2025 - \$609,838 per annum

Convertible debentures

Principal payments due within 2-5 years - \$10,405,000

Royalty debenture

Principal payments due within 2-5 years - \$14,000,000

Senior Secured Debt

During the year ended December 31, 2023, the Company entered into binding Letter of Offer credit agreement with the Business Development Bank of Canada ("BDC") for project financing (the "BDC Financing") of the Empower Calgary Facility of up to \$8,750,000 in non-revolving senior secured debt. The Company will use the proceeds from the BDC Financing for the development and construction of its Empower Calgary Facility in Calgary, AB.

The following is a summary of the material terms of the BDC Financing:

- BDC will provide a senior secured project loan of up to \$8,750,000;
- 15-year repayment period, with 156 principal payments beginning June 2025; and
- Fixed 5-year interest rate of 7.95% payable monthly.

Drawing on the debt is subject to a number of conditions precedent and is secured with a first security interest over the assets of Empower Environmental Solutions Calgary Ltd. and guarantees from Northstar Clean Technologies Inc. and Empower Environmental Solutions Ltd. supported by a first security interest from both guarantors.

As at September 30, 2024, the Company had drawn \$1,600,000 from the BDC Financing. Interest expense of \$7,067 was capitalized in association with construction in progress.

Transaction costs are initially recorded as deferred costs and allocated against the liability proportionately as funds are drawn and amortized over the life of the loan using the effective interest method. During the three and nine months ended September 30, 2024, \$97,900 of these costs were allocated against the liability, with \$184,192 remaining as deferred costs at September 30, 2024.

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Convertible Debentures

The continuity of the convertible debentures as at September 30, 2024 and December 31, 2023 are as follows:

Date of issue	Opening Balance \$	Net Additions \$	Accrued Interest \$	Interest Paid \$	Accretion \$	Conversion \$	Closing Balance \$	Current Portion \$	Long-term Portion \$
December 2022	934,408	-	144,000	(144,000)	126,660	-	1,061,068	6,000	1,055,068
February 2023	-	419,645	52,084	(31,250)	42,176	-	482,655	20,834	461,821
December 2023	-	1,435,125	7,847	-	4,236	-	1,447,208	7,847	1,439,361
December 31, 2023	934,408	1,854,770	203,931	(175,250)	173,072	-	2,990,931	34,681	2,956,250
December 2022	1,061,068	-	107,864	(72,000)	118,352	(57,797)	1,157,487	41,864	1,115,623
February 2023	482,655	-	46,875	(62,500)	46,877	-	513,907	5,208	508,699
December 2023	1,447,208	(5,457)	211,875	(149,882)	142,914	-	1,646,658	70,625	1,576,033
February 2024	-	956,366	106,675	(63,976)	56,595	(18,372)	1,037,288	42,700	994,588
May 2024	-	1,631,202	84,561	-	71,461	-	1,787,224	84,561	1,702,663
June 2024	-	1,397,914	74,219	-	51,038	-	1,523,171	74,219	1,448,952
September 30, 2024	2,990,931	3,980,025	632,069	(348,358)	487,237	(76,169)	7,665,735	319,177	7,346,558

The summary of the convertible debentures terms is as follows:

Type	Date of issue	Issue Date	Maturity Date	Principal Amount	Interest Rate	Conversion Price	Warrant Exercise Price
Type 1	December 2022	15-Dec-22	15-Dec-25	\$1,440,000	10.0%	\$0.25/unit	\$0.35/share
Type 1	February 2023	28-Feb-23	28-Feb-26	\$625,000	10.0%	\$0.25/unit	\$0.35/share
Type 2	December 2023	21-Dec-23	21-Dec-26	\$2,260,000	12.5%	\$0.20/share	\$0.30/share
Type 2	February 2024	16-Feb-24	16-Feb-27	\$1,375,000	12.5%	\$0.20/share	\$0.30/share
Type 1	May 2024	28-May-24	28-May-27	\$2,455,000	10.0%	\$0.29/unit	\$0.50/share
Type 2	June 2024	26-Jun-24	26-Jun-27	\$2,250,000	12.5%	\$0.25/share	\$0.35/share

Refer to the Company’s audited financial statements for the year ended December 31, 2023 for full convertible debenture terms. Principal payments due within 2-5 years are \$10,405,000.

Royalty Debenture

On September 13, 2024 the Company completed an agreement with CVW CleanTech Inc. (“CVW”) pursuant to which CVW provided the Company with \$14,000,000 million in funding through a five-year 10.0% second secured convertible debenture (the “Royalty Debenture”) convertible into revenue royalties on two future facilities. No principal payments are permitted, and interest is paid semi-annually, or at the election of the Company, added to the principal.

Upon the achievement of certain production and financial milestones, the Royalty Debenture will convert the full principal of the Royalty Debenture into two, equal royalty interests in the next two of the Company’s planned asphalt shingle reprocessing

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facilities after the Empower Calgary Facility. The Royalty Debenture will convert at a ratio of 1.7143% for every \$1,000,000 of principal with a royalty interest of 12% resulting from a conversion of \$7,000,000 in principal.

The proceeds will be used to accelerate the development of the Company's next two shingle reprocessing facilities, fund working capital requirements and general corporate purposes. In the event that certain production and financial milestones are not met within a specified conversion period, CVW may elect to convert the royalty interest into the Empower Calgary Facility. In the event of non-conversion, the principal of the Royalty Debenture will be repayable in cash at maturity on September 13, 2029.

For accounting purposes, the Royalty Debenture is a hybrid contract, comprised of the debenture host and an embedded derivative consisting of the royalty conversion. The Company designated the Royalty Debenture upon initial recognition as fair value through profit or loss and accordingly recorded at fair value upon initial recognition and September 30, 2024. Upon initial recognition, the fair value of the Royalty Debenture was \$14,000,000. Transaction costs of \$986,239 were recorded as an expense in the income statement.

During the three and nine months ended September 30, 2024, the Company recognized a loss of \$70,000, due to a change in the fair value of the financial instrument resulting from interest rate fluctuations. The following table presents the change in Royalty Debenture:

	September 30, 2024
Balance, beginning of period	\$ -
Fair value at issuance	14,000,000
Increase in fair value	70,000
Balance, end of period	\$ 14,070,000

Contract Commitments

As at September 30, 2024, the Company had contractual commitments to acquire property, plant and equipment within less than 1 year for \$3,622,107 (December 31, 2023 – \$3,651,853) related to the development and construction of the Empower Calgary Facility.

CAPITAL MANAGEMENT

The Company's capital comprises its shareholders equity under management. The Company's objectives when managing capital are to safeguard the Company's ability to continue as a going concern in order to pursue the development of its processing technology and to maintain a flexible capital structure which optimizes the costs of capital at an acceptable risk.

The Company manages the capital structure and makes adjustments to it in light of changes in economic conditions and the risk characteristics of the underlying assets. To maintain or adjust the capital structure, the Company may attempt to issue new shares, issue new debt or convertible debt, enter into strategic partnerships, enter into royalty financing arrangements and/or acquire or dispose of assets.

In order to facilitate the management of its capital requirements, the Company prepares expenditure budgets that are updated as necessary depending on various factors, including successful capital deployment and general industry conditions. The Board of Directors does not establish quantitative return on capital criteria for management, but rather relies on the expertise of the Company's management to sustain future development of the business.

In order to maximize ongoing development efforts, the Company does not pay dividends. The Company's investment policy is to invest its short-term excess cash in highly liquid short-term interest-bearing investments with maturities of 365 days or less from the original date of acquisition, selected with regards to the expected timing of expenditures from continuing operations.

There have been no changes to the Company's approach to capital management during the period ended September 30, 2024. The Company is not subject to externally imposed capital requirements.

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FAIR VALUE OF FINANCIAL INSTRUMENTS AND RISK MANAGEMENT

Financial Risk Management Objectives

The Company examines the various financial instrument risks to which it is exposed and assesses the impact and likelihood of those risks. These risks may include credit risk, liquidity risk, currency risk and interest rate risk. Where material, these risks are reviewed and monitored.

Liquidity and Capital Management

The Company manages its capital to ensure that it will be able to continue as going concern while maximizing the return to shareholders through the optimization of debt and equity balances.

The capital of the Company consists of items included in Shareholders' Equity of \$1,199,210.

The Company manages its capital structure and makes adjustments in light of changes in economic conditions. To maintain or adjust the capital structure, the Company may issue equity or return capital to shareholders. There were no changes to the Company's approach to capital management during the period ended September 30, 2024. The Company is not subject to externally imposed capital requirements.

Credit Risk

Credit risk is the risk that a counterparty to a financial instrument will fail to discharge an obligation or commitment that it has entered into with the Company. The carrying amounts of financial assets best represent the maximum credit risk exposure at the reporting date.

Cash is held with reputable banks in Canada. The long-term credit rating of these banks, as determined by Standard and Poor's, was A+.

The Company's receivable consists of mainly amounts receivable from customers for tipping fees. Following credit evaluations, it was concluded that the counterparties possess strong creditworthiness, demonstrating their ability to meet financial obligations consistently.

Liquidity Risk

Liquidity risk is the risk that the Company will not meet its financial obligations as they become due.

Accounts payable and accrued liabilities are paid in the normal course of business generally according to their terms. In the normal course of business, the Company enters into contracts that give rise to commitments for future minimum payments. As at September 30, 2024, the Company had \$15,551,137 cash to settle current liabilities of \$6,674,994.

Interest Rate Risk

Interest rate risk is the risk that the fair value or future cash flows of financial instruments will fluctuate because of changes in market interest rates. The Company is not subject to interest rate risk.

Foreign Currency Risk

Foreign currency risk is the risk that the fair value or future cash flows of an exposure will fluctuate because of changes in foreign exchange rates. The Company's exposure to the risk of changes in foreign exchange rates relates primarily to the Company's cash balances held in United States dollars and US dollar denominated payables.

As at September 30, 2024, the Company has certain monetary items denominated in United States dollars. Based on these net exposures, a 10% change of the Canadian dollar against the United States dollar would result in an impact on net loss of \$27,340 (December 31, 2023 – \$612,259). The Company does not hedge its risk from changes in foreign currency exchange rates.

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Force Majeure Events

The Company's operations may be adversely impacted by factors that are beyond the Company's control including pandemics, natural disasters, terrorism, labour disruptions, outbreaks of war, and other forms of economic, health or political disruptions. Such factors may not be foreseeable and may significantly adversely affect global economic conditions, including inflation, supply chain, global shipping, and currency volatility. While many of the restrictions imposed during the COVID-19 pandemic are now being eased globally, the Company's business may still be impacted through lingering or renewed effects of the pandemic, including through supply chain, financial constraints of its customers and suppliers, increasing costs, and difficulty attracting skilled labor, with a result that it may not be able to build, own and operate its Empower Pilot Facility and/or the Empower Calgary Facility within the anticipated timeframe or on budget. In some cases, such delays may result in liquidated damages, and may adversely affect the Company's operations.

The Russia-Ukraine war has drastically reduced capacity for Ukraine to supply goods and raw materials, such as steel. The sanctions imposed on Russia have also led to the reduced availability of Russian-produced steel and other products.

Climate change has increased the incidence of natural disasters caused by weather and climate extremes including heatwaves, droughts, forest fires, atmospheric rivers, torrential downpours and flooding.

Future incidents could significantly adversely affect the Company's operations either directly, or by affecting the businesses of its suppliers or customers. Other events and factors that are beyond the Company's control but that may have a significant adverse effect on the Company's operations include but are not limited to strikes and labour disruptions affecting the Company's suppliers or customers, and global political instabilities such as the outbreak of war, discussed below under "Macroeconomic and Geopolitical Risks and Uncertainties".

While the Company works to mitigate the effects of these uncontrollable events, there is no assurance that they will be effective in doing so in future, particularly when multiple events coincide, and they may negatively impact the Company's operations and profitability.

Unexpected Disruptions Affecting Projects and Operations

The Company's current and future operations can sometimes be subject to delays for a variety of reasons, including labour slowdowns, construction delays unrelated to the Company's products, technological malfunctions, defective materials, or workplace safety. Such delays may delay the recognition of revenue, discourage customers from doing business with the Company, and may hurt the Company's reputation, affecting future sales prospects. The Company may lose sales and may not be able to replace those sales at an acceptable margin or at all. There can be no assurance that such delays will be overcome in a timely manner and to the satisfaction of the customer.

Furthermore, the Company enters into agreements which, consistent with industry standards, may include liquidated damages or termination provisions which may allow customers to claim amounts or terminate and not proceed with proposed projects.

Macroeconomic and Geopolitical Risks and Uncertainties

Macroeconomic and geopolitical risks and uncertainties may have a material adverse impact on the Company's operations. The Company procures a portion of its supplies and equipment from global suppliers. Economic, legal and political conditions globally could adversely affect the Company's ability to conclude sales and procure and timely deliver products. These factors may significantly adversely affect the availability and costs of raw materials and equipment, contribute to inflation and cause currency fluctuations, and cause market volatility, all of which could significantly impact the Company's revenues and profitability and its ability to raise capital as needed.

The Russia-Ukraine war and its related economic and political sanctions on global fuel sources has exacerbated an already challenged global shipping environment and supply chain challenges, for example. These conditions are beyond the Company's control and there can be no assurances that any mitigating actions by the Company or the Company's suppliers will be effective.

The Israel-Palestine war and its related economic and political tensions has created geopolitical risk globally, for example. These conditions are beyond the Company's control and there can be no assurances that any mitigating actions by the Company or the Company's suppliers will be effective.

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Sourcing Equipment

The continuation of global transportation and logistics challenges may have a negative impact on the Company's ability to timely source products and capital equipment. To the Company's knowledge, none of the Company's suppliers or customers have entered into bankruptcy due to the COVID-19 pandemic, natural disaster or other adverse supply chain effects. The Company's purchasing plan identifies alternative sources of supply for equipment suppliers and product fabricators that are essential to the Company's business operations. In 2022, the global supply chain, which was already disrupted by the COVID-19 pandemic, was further impacted by the Russia-Ukraine war. The prices for goods and services continued to increase due to worldwide inflation. The Company is subject to a continued risk resulting from the COVID-19 pandemic, the war in Ukraine and other risks affecting the global supply chain.

Fair Value Measurements Recognized in the Statement of Financial Position

The carrying values of cash, receivables, GST receivable, prepaids, accounts payable and accrued liabilities, equity-based compensation payable, loans payable, and convertible debentures included on the consolidated balance sheet approximates the fair values of the respective assets and liabilities due to the short-term nature or market rate of interest of those instruments.

The fair value of the royalty debenture is determined based on the best available information at the measurement date, incorporating observable market data, market participant assumptions, and adjustments for current market conditions, along with unobservable inputs such as status of company operations and future cash flows.

The Company categorizes its financial assets and liabilities measured at fair value into one of three different levels depending on the observability of the inputs used in the measurement. The three levels are defined as follows:

- Level 1: Inputs to the valuation methodology are quoted prices (unadjusted) for identical assets or liabilities in active markets.
- Level 2: Inputs to valuation methodology include quoted prices for similar assets and liabilities in active markets, and inputs that are observable for the asset or liability, either directly or indirectly, for substantially the full term of the financial instrument.
- Level 3: Inputs to the valuation methodology are unobservable and significant to the fair value measurement.

There has been no change to the fair value hierarchy levels during the period.

OUTSTANDING SHARE DATA AS AT SEPTEMBER 30, 2024 AND AS AT THE DATE OF THE MD&A:

- a) Authorized Share Capital:
Unlimited number of common shares without par value.
- b) Issued Share Capital as at September 30, 2024:
128,771,908 common shares with a stated value of \$28,483,004.
29,244,756 preferred shares with a stated value of \$5,631,271.

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c) Outstanding and exercisable stock options as at September 30, 2024:

Expiry Date	Number of Options		
	Exercise Price	Outstanding	Exercisable
December 15, 2024	\$ 0.21	425,000	425,000
February 16, 2026	\$ 0.21	2,500,000	2,500,000
June 12, 2026	\$ 0.21	300,000	300,000
July 12, 2026	\$ 0.21	2,100,000	2,100,000
December 15, 2026	\$ 0.21	400,000	400,000
February 7, 2027	\$ 0.21	200,000	200,000
April 19, 2027	\$ 0.21	246,569	159,617
August 30, 2027	\$ 0.21	20,000	20,000
March 2, 2028	\$ 0.21	11,000	8,250
September 7, 2028	\$ 0.21	1,109,758	912,022
October 4, 2028	\$ 0.21	25,000	6,250
January 8, 2029	\$ 0.21	250,000	62,500
February 20, 2029	\$ 0.21	11,000	2,750
September 19, 2029	\$ 0.215	2,625,002	-
Total Outstanding		10,223,329	7,096,389

The estimated remaining life of the stock options at September 30, 2024 is 2.79 years.

Subsequent to the nine months ended September 30, 2024, total of 264,286 stock options were forfeited.

d) Outstanding and exercisable warrants as at September 30, 2024:

	Expiry Date	Exercise Price	September 30, 2024	December 31, 2023
	July 13, 2026 (1)	\$ 0.279	4,596,268	4,596,268
Finders warrants	July 13, 2026 (1)	\$ 0.279	406,249	406,249
	July 13, 2026 (1)	\$ 0.465	490,615	490,615
Finders warrants	July 13, 2026 (1)	\$ 0.465	204,457	204,457
Broker warrants	December 15, 2025	\$ 0.350	157,200	157,200
Broker warrants	February 28, 2026	\$ 0.350	24,000	24,000
Broker warrants	April 19, 2026	\$ 0.200	511,819	511,819
	April 19, 2026	\$ 0.200	18,195,367	18,195,367
	December 21, 2026	\$ 0.300	11,300,000	11,300,000
Broker warrants	December 21, 2026	\$ 0.300	420,000	420,000
	February 16, 2027	\$ 0.300	6,875,000	-
Broker warrants	February 16, 2027	\$ 0.300	131,250	-
Broker warrants	July 5, 2026	\$ 0.350	250,000	-
	June 26, 2027	\$ 0.350	9,000,000	-
Broker warrants	June 26, 2027	\$ 0.350	720,000	-
	December 15, 2025	\$ 0.350	140,000	-
Outstanding and exercisable			53,422,225	36,305,975

(1) The warrants outstanding on acquisition were converted at a ratio of 1 old for 1.0747 new warrants on December 23, 2020 and the price was adjusted by the same ratio. All warrants were reissued on July 13, 2021, for a period of 5 years when the Company became publicly listed and commenced trading, with a new expiry date of July 13, 2026. These warrants are non-transferable.

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e) Issued RSUs and PSUs outstanding as at September 30, 2024:

	Vesting Date	Issued	Cash-settled	Equity-settled
2022 RSUs	March 31, 2025	108,998	11,785	97,213
2023 RSUs	March 31, 2025	213,571	-	213,571
2024 RSUs	September 19, 2025	395,641	-	395,641
2024 RSUs	September 19, 2026	395,641	-	395,641
2022 Actual PSUs	March 31, 2025	486,069	201,308	284,761
2023 Actual PSUs	March 31, 2025	720,803	-	720,803
Total RSUs and PSUs		2,320,723	213,093	2,107,630

During the period ended September 30, 2024, the Company initiated a restructuring plan of its performance units and cancelled 1,421,427 of the 2023 cash-settled PSUs and RSUs. These cancelled cash-settled PSUs and RSUs were replaced with the accrual of long-term cash bonuses. As at September 30, 2024, a total of \$361,042 of the bonuses payable were accrued and presented within accounts payable and accrued liabilities.

Total compensation recognized for RSUs and PSUs vested during the nine month period ending September 30, 2024 was \$549,295, of which \$361,042 is presented as wages and benefits, and the remaining \$188,253 is presented as share-based compensation in the condensed consolidated interim statement of loss and comprehensive loss.

During the period ended September 30, 2024, certain 2023 cash-settled PSUs and RSUs were paid-out in the amount of \$28,281. The \$26,526 of cash-settled RSUs and PSUs that vested on March 31, 2024 have not yet been paid out, and are recorded in equity-based compensation payable. Certain cash-settled PSUs were paid-out in the amount of \$31,903 during the year ended December 31, 2023.

During the period ending September 30, 2024, the company issued 1,195,743 common shares to employees as payment for the equity-based PSUs and 460,784 common shares as payment to employees for the equity-based RSUs both of which vested on March 31, 2024 and September 7, 2024, and were issued at a total value of \$269,793.

f) Shares held in escrow or pooling agreements: Nil.

g) As of the date of this MD&A the Company had the following outstanding:

129,725,408 common shares and 29,244,756 preferred shares;
10,533,329 stock options;
53,218,725 warrants; and
2,630,723 restricted and performance shares units.

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SUBSEQUENT EVENTS

In addition to subsequent events disclosed elsewhere in this MD&A, the following occurred after September 30, 2024:

- The Company finalized a lease for office space with an initial term of 5 years commencing February 1, 2025, for approximately \$7,200 per month. The lease includes an option to extend for one additional 5-year term, and the ability to terminate after May 1, 2026 with certain conditions. Upon execution of the lease a security deposit of \$15,430 was paid.
- The Company negotiated a new lease which consolidates the land leased at its planned scale up facility in Rocky view County and a building housing the facility for approximately \$80,000 per month, an initial term of 15 years commencing March 1, 2025, and an option to extend for two additional 5-year terms. Upon execution of the lease an additional security deposit of \$150,000 was paid. A second cash security payment of \$1,000,000 was provided and is fully refundable at the end of year 6. Remaining security deposits are fully refundable at the end of year 11.
- The Company received \$2,705,618 under its senior secured debt facility. The total amount outstanding under the senior secured debt facility is currently \$4,305,618.
- 203,500 common shares were issued pursuant to the exercise of warrants and 750,000 common shares issued pursuant to the conversion of Type 2 Convertible Debentures issued February 2024.
- The Company approved the grant of 310,000 RSUs and 310,000 options to certain directors, officers, employees and consultants of the Company.