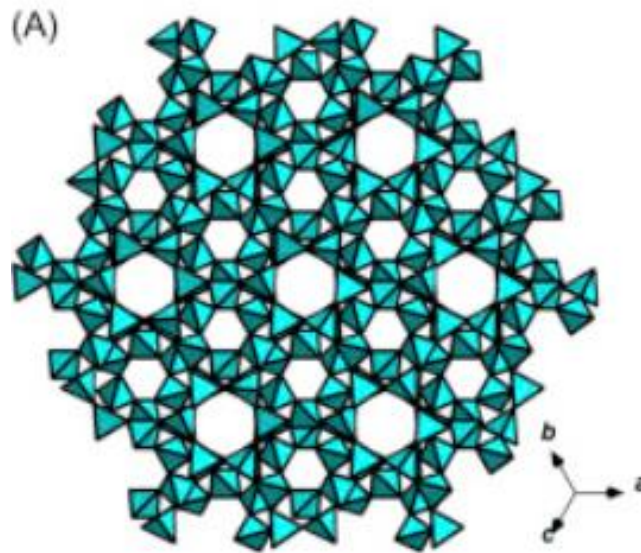


# ZMM Canada Minerals Corp.

## Advanced Zeolite Materials



*A Canadian Cleantech Company*



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This presentation contains certain forward-looking statements and forward-looking information concerning the proposed financing and the business, operations and financial performance and condition of ZMM Canada Minerals Corp. ("ZMM"). Forward-looking statements and forward-looking information include, but are not limited to, statements with respect to estimated production and resource life of the TransCanada ("TC") and/or Juniper ("Juniper") and the estimation of mineral resources; the timing and amount of estimated future production, if any; costs of production; and success of exploration activities. Except for statements of historical fact relating to ZMM, certain information contained herein constitutes forward-looking statements. Forward-looking statements are frequently characterized by words such as "plan," "expect," "project," "intend," "believe," "anticipate," "estimate" and other similar words, or statements that certain events or conditions "may" or "will" occur. Forward-looking statements are based on the opinions and estimates of ZMM's management at the date the statements are made and are based on a number of assumptions and subject to a variety of risks and uncertainties and other factors that could cause actual events or results to differ materially from those projected in the forward-looking statements. Assumptions upon which such forward-looking statements are based include that ZMM will obtain all required regulatory and governmental approvals to production within the time periods contemplated herein; that demand for the minerals produced will be as projected herein; and that Canada will remain a mining jurisdiction. Many of these assumptions are based on factors and events that are not within the control of ZMM and there is no assurance they will prove to be correct. Factors that could cause actual results to vary materially from results anticipated by such forward-looking statements include changes in market conditions, variations in ore grade or recovery rates, risks relating to international operations, fluctuating mineral(s) and currency exchange rates, changes in project parameters, the possibility of project cost overruns or unanticipated costs and expenses, labour disputes and other risks of the extraction/mining industry, failure of plant, equipment or processes to operate as anticipated. Although ZMM has attempted to identify important factors that could cause actual actions, events or results to differ materially from those described in forward-looking statements, there may be other factors that cause actions, events or results not to be anticipated, estimated or intended. There can be no assurance that forward-looking statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. ZMM undertakes no obligation to update forward-looking statements if circumstances or management's estimates or opinions should change except as required by applicable securities laws. The reader is cautioned not to place undue reliance on forward-looking statements.

## CAUTIONARY NOTE TO U.S. INVESTORS CONCERNING ESTIMATES OF RESOURCES

This presentation uses the terms "Measured", "Indicated" and "Inferred" Resources as defined in accordance with National Instrument 43-101 – Standards of Disclosure for Mineral Projects. United States readers are advised that while such terms are recognized and required by Canadian securities laws, the United States Securities and Exchange Commission does not recognize them. United States readers are cautioned not to assume that all or any part of the mineral deposits in these categories will ever be converted into reserves. In addition, "Inferred Resources" have a great amount of uncertainty as to their existence, and as to their economic and legal feasibility. It cannot be assumed that all or any part of an Inferred Resource will ever be upgraded to a higher category. United States readers are also cautioned not to assume that all or any part of an Inferred Resource exists, or is economically or legally mineable.



## ZMM Vision and Mission

**ZMM Vision:** To utilize innovative science and technologies for the development of zeolite/basalt sustainable, environmental solutions.

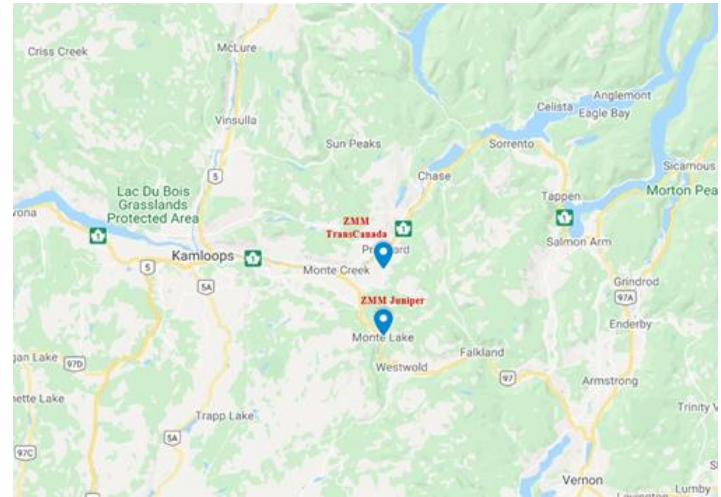
**ZMM Mission:** To engage company employees, stakeholders, first nations, and the local community in ZMM's vision without compromising the needs of future generations, while ensuring a balance between economic growth while minimalizing any environmental impact.

**ZMM Activities:** ZMM Canada Minerals Corp. (ZMM or the Company), is a closely held private industrial minerals exploration and product development company incorporated in British Columbia in 2014 to develop two natural, specialty zeolite/basalt industrial mineral properties, the TransCanada (TC) and Juniper. The Company was granted 30-year mining leases on both the TC and Juniper properties in 2022 by the British Columbia (BC) Ministry of Energy, Mines and Low Carbon Innovation. The 184-hectare TC lease is 20 km southeast of Kamloops; the 21-hectare Juniper lease is 30 km west of the TC deposit (approximately 30 km west of Kamloops ).

# ZMM Advantage

## Highlights

- 1 Logistical** – two high purity zeolite/basalt orebodies in proximity to Kamloops, British Columbia, a major transportation hub in western Canada on the TransCanada Highway and Canadian National and Canadian Pacific rail yards.
- 2 Low-cost surface quarrying** – minimal environmental footprint; conventional processing; no waste – everything quarried has a product classification with no alteration to processing stream.
- 3 Three major targeted market segments** – advanced technology products, environmental remediation products, and consumer products.
- 4 No direct competition in Canada** – for the new high purity crystal (“HPC”) advanced technology applications.
- 5 Community** - continuous engagement with, and employment of, Canada’s Indigenous Peoples.



## Location ZMM Zeolite Orebodies

### TransCanada Orebody

- 1 Located 32 kms east of Kamloops on Highway 97 (50.62046-119.88651).
- 2 CN and CP rail yards located in Kamloops for intermodal and bulk transport throughout Canada and US markets.
- 3 BC Hydro power lines within 700 meters of the planned plant site.
- 4 Water supply through collection of rain to cisterns.
- 5 Mine Number – 1620039 (BC).
- 6 Permit Number – MX-15-165 (BC).
- 7 Lifetime Resource estimate - 7.6 million tonnes.

### Juniper Orebody

- 1 Located 25 kms southwest of the TransCanada Property on Highway 97 S to a timber haul road (50.4409-119.8861).
- 2 Power/water not needed at site as extracted material will be transloaded to TransCanada plant for processing.
- 3 Mine Number – 1621717 (BC).
- 4 Permit Number – MX-4-734 (BC).
- 5 Lifetime Resource estimate - 1.7 million tonnes.

## The Team at ZMM Canada Minerals Corp.



**LuVerne (Verne) E.W. Hogg, Founder, President/CEO, Director**

Verne is a veteran of the mineral industry with extensive international experience. As a geoscientist, he has directed exploration, development, production, commercialization, and marketing of specialty industrial minerals worldwide. He is a well-known and respected industry expert with a lifetime of experience in mining operations around the world. He focuses on the creation and commercialization of new specialty zeolite mineral products and solutions by applying continuous advanced research and development. As a member of the Canadian Institute of Mining, Metallurgy and Petroleum Verne can prepare estimates of mineral resources or mineral reserves for industrial mineral deposits. He is the author of many industrial mineral papers on zeolite production, mineral research, product development, and application.

## The Team at ZMM Canada Minerals Corp.



### David W.J. McAdam, Chief Financial Officer

David is a highly effective, results oriented, executive, with over 30 years of finance and operations experience in large and small capitalization companies. He has extensive expertise in fund raising, supporting over \$250 million in equity and over \$100 million in debt; financial/operational integration/optimization and measuring; financial planning and analysis; mergers and acquisitions; due diligence; investor relations (TSX.V and JSE); systems strategy, implementation oversight and management; and risk management. David has been the Chief Financial Officer of several public and private companies across various industry sectors, including public and private mining companies - one, a Vancouver based TSX company with producing assets in South Africa and public reporting across the TSX-AIM-JSE and a Fortune 150 waste management/recycling company as VP Operations and Director of Finance.

He holds a Bachelor of Commerce from the University of British Columbia and a Securities Institute of Canada Certificate.

## The Directors of ZMM



**LuVerne E.W. Hogg**  
President/CEO/  
Geologist/Director

Verne is a well-known and respected industry expert focusing on the creation and commercialization of specialty zeolite mineral solutions.



**Valary L. Schulz**  
Professional  
Geologist/Director

ZMM co-founder and PGeo., Valary is a recognized expert in petroleum exploitation geology with a mastery in reservoir characterization.



**Cheryl V. Hogg,**  
Corporate  
Secretary/Director

An administrative, communications and HR specialist, Cheryl manages ZMM's administration and corporate reporting requirements.



## The ZMM Operations Team



**Thomas H. Charles,  
Lands Officer**

Formerly a BC ministry of energy, mines and petroleum resources inspector, Tom is ZMM's government and stakeholder liaison.



**Raymond G. J. Johnson,  
Chief Field Operations**

A field operations expert, Raymond brings 33 years of field experience to ZMM. He assists in operations at both ZMM properties.



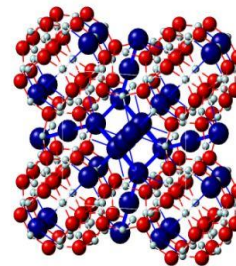
**Jörg T. Gallo,  
International  
Geologist/Advisor**

With his BSc in geology/paleontology, Jörg provides geological expertise and project management oversight.

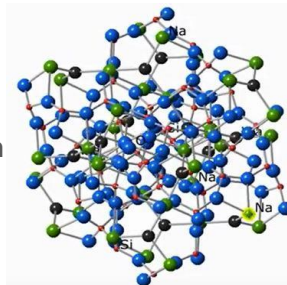
# Zeolite Facts

## New Discoveries Creating New Materials

- 1 Zeolite is a naturally occurring mineral with unique properties that consist of an open, three-dimensional cage-like structure with a vast network of open cavities and channels.
- 2 The channels are occupied by  $H_2O$  molecules and cations that are exchangeable. These unique microporous and mesoporous minerals can act as molecular sieves, adsorbents, and absorbents. Their large molecular surface area is approximately  $800m^2/gram$ .
- 2 ZMM zeolite minerals are crystalline minerals with defined molecular structure. Due to their physiochemical properties, they can be engineered for application into a growing range of specialty products.
- 4 The zeolite orebodies are contained in mafic vesicular basalt of Miocene age. ZMM zeolite surficial occurrences, in the quality, quantity and purity present, are rare.



Juniper  
molecular structure high  
purity zeolite (chabazite)



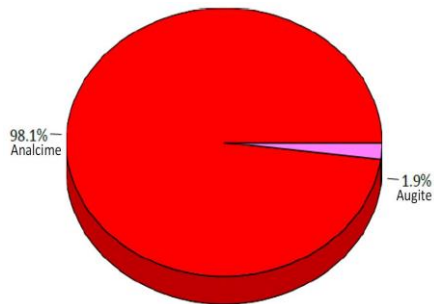
TransCanada  
molecular structure high  
purity zeolite (analcime)

# Breakthrough, Sustainable Zeolite Technologies

## Proprietary Energy Reduction Systems

High purity zeolite for high performance materials, systems, and intellectual properties for Thermal Energy Storage (“TES”) by reversible hydration/dehydration; waste to valuables potassium recovery from potash tailings; development of zeolite-based bifunctional catalysts from in Canada for post combustion CO<sub>2</sub> conversion; and nanotechnology applications.

Appendix #1

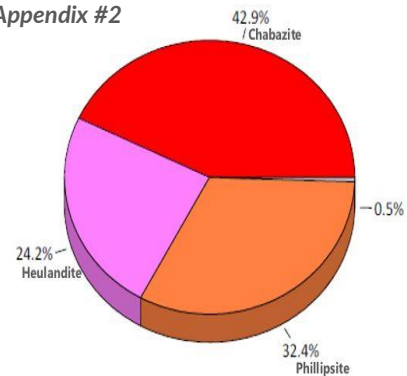


XRD TransCanada high purity zeolite



ZMM High purity zeolite crystals

Appendix #2



XRD Juniper high purity zeolite

# Innovative Zeolite Solutions to Reduce Greenhouse Gas Emissions

## ZMM Zeolite Materials – Creating Positive, Sustainable, Economic Climate Change Solutions

- 1 Development of two high purity zeolite solutions for sustainable environmental applications – the first commercial grade discovery of high purity, crystalline natural zeolites in Canada (*Appendix #1, #2*).
- 2 ZMM conducts innovative, applied research, development and commercialization of zeolite products in collaboration with industry, universities and government agencies, generating proprietary intellectual properties.
- 3 Construction of Canada's first processing plant to provide high purity zeolite for application as molecular sieves, nanostructured zeolites for energy reduction, energy storage, environmental remediation, and biomedical nanotechnologies.
- 4 Utilizing ZMM high purity crystalline ("HPC") natural zeolite as host matrices for the development of low-cost, stable thermochemical energy storage materials ("TES") (*Appendix #3*), and vacuum insulation panels ("VIP") (*Appendix #4*).
- 5 ZMM zeolite for reduction of petroleum and biosolids utilizing ZMM Cold Zone Composting ("CZC") system (*Appendix #5*); potash tailings innovative waste-to-valuables conversion utilizing ZMM zeolite (*Appendix #6*); Supplementary Cementitious Materials ("SCM") replacement for encapsulation of hazardous wastes utilizing ZMM's Isolate, Stabilize and Solidify ("ISS") system.

# ZMM Engineered Products

## 1 Advanced Technology

- i New low-cost Thermal Energy Storage (“TES”) systems can be utilized in cold zones throughout North America.
- ii Vacuum insulation Panels (“VIP”) for cold chain and building envelopes for utilization in North American cold zones.
- iii Other IP currently in development.

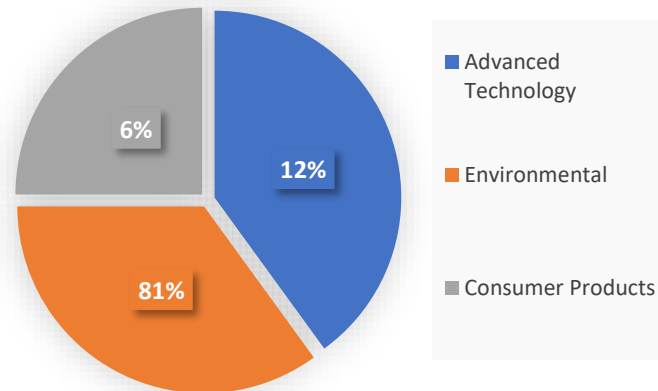
## 2 Environmental

- i Industrial – Supplementary Cementitious Materials (“SCM”) provides a significant reduction of GHG in the manufacture of concrete.
- ii Cold Zone Composting (“CZC”) system for remediation of petroleum waste year-round in North American northern climates.
- iii ZMM’s Isolate, Stabilize and Solidify (“ISS”) system for remediation of hazardous wastes.

## 3 Consumer Products

- i Agricultural – Controls mycotoxins and alpha toxins in animal feeds, provides odour control in livestock operations.
- ii Horticulture – Soil supplement, increases crop yield, retains water.

## ZMM Revenue Streams

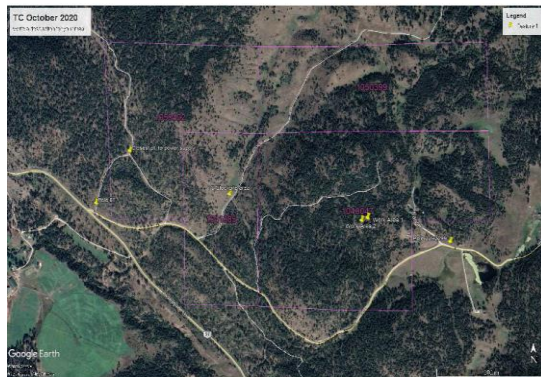


## Site and Building Details

ZMM TransCanada zeolite mineral claim area is 226 hectares of which 186 hectare is the lease area, located 20 km from the Kamloops transportation hub. BC Hydro powerlines are proximal to the property.

### Total CapEx

Processing equipment	2,302,000
Buildings	1,150,000
Contingency	614,000
BC Hydro	500,000
EPC Fee	492,000
Site Prep	380,000
Support Vehicles	175,000
Scales	80,000
<b>Total</b>	<b>5,702,000</b>



Aerial of TransCanada property



Proposed plant site on the TransCanada property

## Appendices Follow



Stockpiling TransCanada Ore at Plant Site



# Appendix #1 and #2

Saskatchewan Research Council

## Appendix #1 ZMM TransCanada High Purity Crystals

FILE: [HPC.raw] ZMM HPC\*

SCAN: 4.0/70.0537/0.01997/49.7(sec), Cu(40kV,40mA),  $\lambda(\mu)$ =104629, 12/17/20 12:37p

PROC: [WPF Control File]

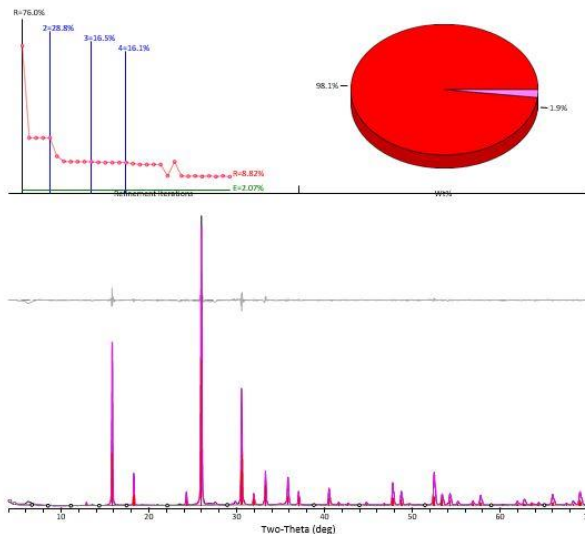
- ☒ K-alpha2 Peak Present
- ☒ Allow Negative Isotropic B
- ☒ Allow Negative Occupancy
- ☒ Apply Anomalous Scattering

- ☒ [Diffractometer LP] Two-Theta Range of Fit = 5.0 - 70.1(deg)
- ☒ Specimen Displacement - Con(Theta) = 0.017264
- ☐ Monochromator Correction for LP Factor = 1.0
- ☐ K-alpha2/K-alpha1 Intensity Ratio = 0.5

Profile Shape Function (PSF) for All Phases: Pearson-VII, Fixed-BG, Lambda=1.54059Å (Cu/K-alpha1)

Phase ID (2)	Source	I/Ic	Wt%	IL
■ Analcime - $[\text{Si}_{12}(\text{Al}_{14})\text{Na}_{24}\text{O}_{114}]$	PDF#98-090-0830	0.70(5%)	98.1 (6.9)	276
■ Augite - $\text{Na}_{22}\text{Ca}_{10}\text{Mg}_{10}\text{Fe}_{22}\text{Al}_{10}\text{Ti}_{10}\text{Si}_{10}\text{O}_{10}$	PDF#98-090-1410	2.50(5%)	1.9 (0.1)	91

NOTE: Fitting Halted at Iteration 31(4): R=8.82% (R=2.07%, R/E=4.27, P=19, EPS=0.5)



Saskatchewan Research Council

## Appendix #2 ZMM Juniper High Purity Crystals

FILE: [Juniper Non-Mag Sample1.raw] Juniper Non-Mag Sample1\*

SCAN: 4.0/70.0537/0.01997/49.7(sec), Cu(40kV,40mA),  $\lambda(\mu)$ =22568, 01/20/21 09:36p

PROC: [WPF Control File]

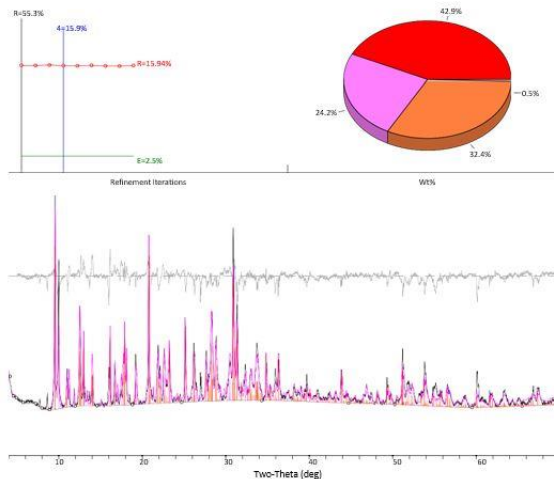
- ☒ K-alpha2 Peak Present
- ☒ Reflection at Peak Centroid
- ☒ Allow Negative Isotropic B
- ☒ Allow Negative Occupancy
- ☒ Apply Anomalous Scattering

- ☒ [Diffractometer LP] Two-Theta Range of Fit = 5.0 - 70.1(deg)
- ☒ Specimen Displacement - Con(Theta)=0.014568(0.002046)
- ☐ Monochromator Correction for LP Factor = 1.0
- ☐ K-alpha2/K-alpha1 Intensity Ratio = 0.5

Profile Shape Function (PSF) for All Phases: Pearson-VII, Fixed-BG, Lambda=1.54059Å (Cu/K-alpha1)

Phase ID (4)	Source	I/Ic	Wt%	IL	PC
■ Chabazite - $\text{Ca}_{12}\text{K}_{10}(\text{Si}_{12}\text{Al}_{14})\text{O}_{114}\text{H}_{24}$	PDF#98-090-3798	1.33(5%)	42.9 (2.6)	130	<None>
■ Heulandite - $\text{Na}_{40}\text{K}_{2}\text{Ca}_{12}\text{Ba}_{12}\text{Si}_{12}\text{Al}_{12}\text{O}_{114}\text{H}_{24}$	PDF#98-090-8552	0.47(5%)	24.2 (1.6)	484	(020)=0.887
■ Phillipsite - $\text{K}_{10}\text{Na}_{10}\text{Ca}_{10}(\text{Al}_{10}\text{Si}_{10}\text{O}_{114}\text{H}_{24})$	PDF#98-091-3842	0.40(5%)	32.4 (2.0)	472	<None>
■ Gypsum - $\text{CaSO}_4\text{H}_2\text{O}$	PDF#98-090-8034	4.67(5%)	0.5 (0.1)	103	<None>

NOTE: Fitting Halted at Iteration 9(4): R=15.94% (R=2.5%, R/E=6.35, P=35, EPS=0.5)



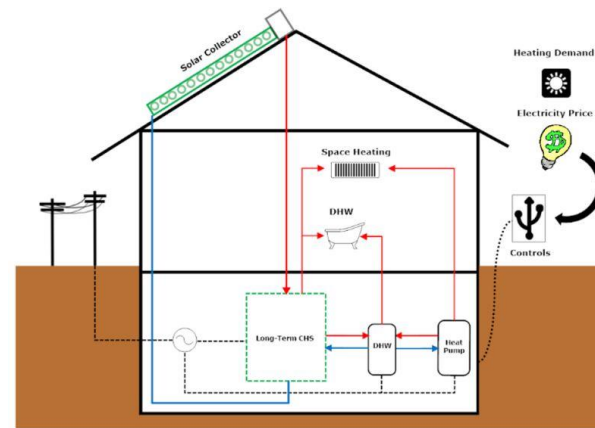


## Appendix #3

# Applied Research and Development Initiative

Natural Resources Canada – CanmetENERGY – Utilizing ZMM HPC zeolites as host matrices for the development of low-cost, stable thermochemical energy storage (TES) materials

- 1 Utilizing ZMM HPC zeolite in TES will substantially reduce energy costs and reduce CO2 emissions.
- 2 ZMM zeolites have provided the best performance to date – a technological breakthrough.
- 3 The potential of large-scale electrical grid integration of TES in various electrical jurisdictions is unlimited in the Canadian marketplace.



Envisioned Concept of an Integrated RTE System

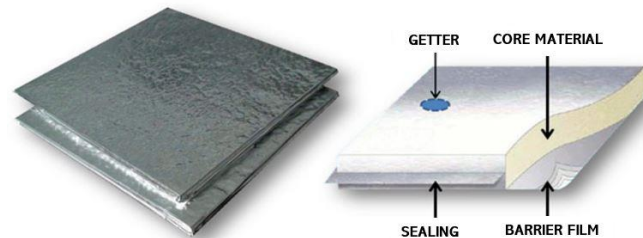
Program initiated September 2019  
Completion estimated 2025

## Appendix #4

# Applied Research and Development Initiative

### University of Victoria – Vacuum insulation panels (VIPs) with ZMM zeolite-fibre composite core

- 1 VIPs have a very high R factor – R40 per inch is generally considered optimum insulation value.
- 2 Currently, insulation materials are produced in several countries using the core material silica fume, at a cost of over \$1,000 per tonne, which precludes its use as insulation for building envelopes.
- 3 Successful development of a lower cost VIP, utilizing ZMM zeolite as the core material, will enable economical production of VIPs for building envelopes and cold chain, thereby reducing energy costs and lowering CO2 emissions.



Program initiated September 2016  
completion estimation April 2021

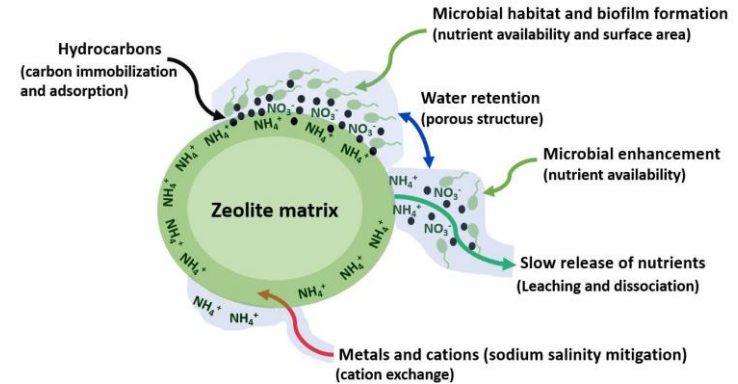
## Appendix #5

# Applied Research and Development Initiative

University of Saskatchewan – Innovative zeolite-based bioremediation strategy for petroleum – contaminated soils in cold climates

- 1 ZMM's zeolite and T-Carbon promote composting of petroleum wastes year-round at extreme temperatures in northern Canada.
- 2 The addition of ZMM materials enhances and increases microbial composting action for stress-tolerant bioremediation for petroleum contamination for up to five months.
- 3 ZMM has a supply contract for T-Carbon with Tolko Industries.

Roles of zeolites for soil bioremediation



Program initiated February 2018  
Successfully developed 2021

## Appendix #6

# Applied Research and Development Initiative

University of Saskatchewan – Integrated desalination, nutrient recovery and bioremediation of potash tailings: Innovative Waste-To-Valuables Conversion Using ZMM Zeolites

- 1 Groundwater has been negatively impacted in Saskatchewan with over fifty million tonnes of potash waste salt tailings.
- 2 The new, innovative approach at U of S using ZMM zeolites for cation exchange, combined with mayenite for anion exchange, resulting in a new system for mitigating the salinity of groundwaters impacted by potash mining effluent wherever these conditions exist.

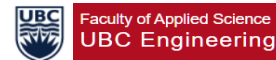
Potash Tailings and Brines



Program initiated September 2020  
Successfully developed 2023

## Appendix #7

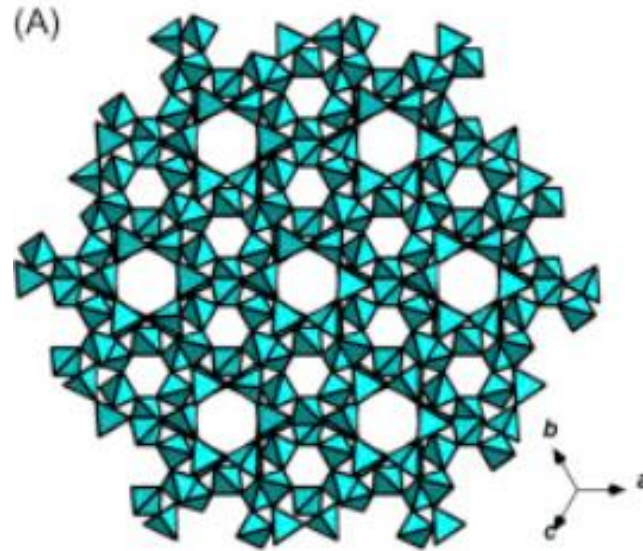
# Government, Corporate, and University Contributors





# ZMM Canada Minerals Corp.

## Advanced Zeolite Materials



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(250) 767-6788

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