

Mining Matters Annual Newsletter

2020



A Message from the CEO



For the past 26 years, Mining Matters has inspired young minds across Canada with innovative programs about Earth science and mineral resources. I am pleased to share that we have now reached more than 780,000 students, teachers and members of the public with our programs and teaching materials.

Twenty-six years have allowed us to hone our skills and develop a wide range of activities, and yet, we are always looking to try new things and broaden our audience. The year 2020 gave us a unique opportunity for this in the wake of COVID-19. As the world shifted to a digital platform, we shifted our focus from delivering face-to-face programs to engaging with our audience through technology and extending partnerships.

Challenging times produce opportunities to be creative, build new skill sets, and to think outside the box. Although the pandemic threw us unexpected obstacles including school closures and travel restrictions, it has been an exciting time for Mining Matters. Our team has worked vigorously to develop online activities and resources that provide access to information about geology in safe, fun, and interactive ways. We participated in Virtual Mining Week celebrations, an online STEM Fair, and assembled at-home activity kits that were distributed to our Indigenous community partners who lack internet access so that they could enjoy Earth science activities.

We also created a new page on our website: GEMS – DIY Activities where we've published several hands-on activities with instructions so that families can explore geology, engineering, mining and sustainability while physical distancing. I am extremely proud of all that we have accomplished under these circumstances.

Furthermore, we added braille to some of our resources to make them accessible to the blind and partially sighted community and we had one of our teacher resource kits translated into Spanish.

I invite you to read about our successes and triumphs from the past year. This newsletter also celebrates former staff members and directors and looks forward to future plans.

Thank you to our dedicated partners, sponsors and donors who have continued to show their support. Your investment in us gives us the confidence to continue bringing mineral resources education to youth all over the country. In times like these, we are incredibly uplifted by the community surrounding our cause. Together, we know we can accomplish our goals.

Patricia Dillon
President and CEO



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Welcome New Board Members

As Mining Matters endeavours to broaden programming, strengthen partnerships and expand reach, we are very pleased to welcome Ilan Bahar, Normand Champigny, and Steven Reid to our Board of Directors.

"I look forward to partnering with our new directors, who add to the extensive breadth of expertise, experience and skills of our board," said Patricia Dillon, Mining Matters President and CEO. "They bring decades of leadership in key areas that are vital to our future operations and strategy, which will serve to strengthen the organization's impact in Canada and beyond as we continue to build mineral literacy through STEM education."



Mr. Bahar is Co-Head of BMO Capital Markets' Global Metals & Mining Group, having joined the firm in 2005. Mr. Bahar is responsible for the strategic direction, coordination, and performance of BMO Capital Markets' Global Metals & Mining practice, which for the 11th consecutive year was recognized by Global Finance in 2020 as the World's Best Metals & Mining Investment Bank. Mr. Bahar has a long-standing track record advising metals and mining companies globally on mergers and acquisitions, hostile defence, activism, and debt and equity offerings. Representative transactions include advising Detour Gold on its C\$5 billion sale to Kirkland Lake, advising Newmont on its US\$10 billion combination with Goldcorp and Nevada joint venture with Barrick, advising Vale on its US\$690 million cobalt stream sale, advising Thompson Creek on its US\$1.1 billion sale to Centerra, and acting as bookrunner for over C\$2.5 billion of equity offerings for Detour Gold. Mr. Bahar graduated from the University of Toronto with a B.A.Sc. in Industrial Engineering and was awarded the W.S. Wilson Medal upon graduation.



Mr. Champigny is a geological engineer with extensive experience with both public and private companies, domestically and internationally and is currently a director of Bonterra Resources. He has been involved in many facets of the mining industry, including engineering, project evaluation, and project management. Mr. Champigny is a member of the Ordre des Ingénieurs du Québec. Until recently, Mr. Champigny was an Executive Committee Member of the Prospectors & Developers Association of Canada. He was Chair of the Board of Directors of Minalliance, an organization raising awareness about the mining industry in Québec and highlighting its positive contribution to Québec's social, economic, and environmental development. Mr. Champigny is a graduate from École Polytechnique in Montréal (B.A.Sc.), University of British Columbia (M.A.Sc.), and Paris School of Mines (Specialized Diploma in Geostatistics).



Mr. Reid is a Managing Director with the CIBC Mining Investment Banking Group with experience working in both the Toronto and London capital markets. With more than 15 years' experience in the metals, mining and financial services sector, Mr. Reid has an extensive track record in advising a wide range of metals and mining companies around the world and in structuring and executing equity financings, initial public offerings and other capital raisings. Mr. Reid has also historically been involved with other Toronto based charitable foundations including Out of the Cold and HouseLink. Mr. Reid holds a Bachelor of Business Administration from Wilfrid Laurier University and a Masters in Finance (M. Sc.) from London Business School in London, England.

2019-2020 HIGHLIGHTS

34,000+

Total individuals who enjoyed Earth science activities at schools, camps, conventions, conferences and public events across Canada *

1,700+

Individuals reached through our Indigenous Communities Education and Outreach Programs *

21,000+

Students reached through our Teacher Training and School Programs *

10,000+

Participants engaged through our Outreach and Partnership Programs *

780,000

Reached with our educational resources about rocks, minerals, metals and mining since inception

Compiled a series of more than **25 DIY activities** to engage parents and their children in building mineral literacy during the transition to at-home learning

Delivered **online synchronous learning workshops** for students and teacher professional development

Continued engagement with **Indigenous community partners** who may lack connectivity through the distribution of geology, engineering, mining and sustainability (GEMS) activity kits for young people to complete at home

Partnered with the **Lassonde Institute of Mining** at the University of Toronto to deliver a new student workshop — ***Mining and Microbes! Who Lives in the water?***

Partnered with **Let's Talk Science** to contribute a hands-on learning activity to their Horizon Project, which will provide 75,000 youth in low socio-economic communities across Canada with a package of 'unplugged' learning resources

* Estimated

Science Literacy Week – September 19 to 27, 2020

It brings us joy when we're able to provide fun learning resources for kids. Mining Matters partnered with libraries in Ajax, Kingston, Regina and St. John's to distribute 120 activity kits to children during Science Literacy Week. The national movement celebrates science in Canada and engages youth in exhilarating ways as libraries, museums, universities and organizations come together to provide science-based activities.

Our activity kits contained all the equipment and resources to allow young people to enjoy seven hands-on activities and experiments that make the connection between Earth science, mineral resources and the important role they play in our lives and in creating a sustainable future.

Participants explored seismic hazards and modelled a landslide, built a groundwater model, learned about minerals, metals and elements that are used in power generation, and conducted a series of experiments linking pH to microbiology—all while learning about the United Nations Sustainable Development Goals (SDGs), discovering how geoscientists help to achieve the SDGs, and thinking about how they can personally contribute to sustainability in their day-to-day lives.

The annual week-long showcase took place during the last week of September. We would like to thank the Natural Sciences and Engineering Research Council of Canada (NSERC) for providing funding for these programs.



Let's Talk Science Partnership

Mining Matters partnered with Let's Talk Science to contribute a hands-on learning activity to their Horizon Project, an initiative that will provide 75,000 vulnerable youth in Grades 4-6, including over 8,000 Indigenous youth, with exciting, free hands-on STEM and literacy activities that require no internet access. Every package includes an engaging activity workbook, supplies to do the activities, an age-appropriate book and other surprises, including a contest to win more than 200 prizes.

The Mining Matters activity engages youth in creating three Mineral Mates by folding geometric nets to build three-dimensional models of beryl, diamond and halite. They learn about each Mineral Mate's geometric shape, physical characteristics, locations in Canada where they are found, and how they are used in everyday life.

We were thrilled to contribute to Let's Talk Science's Horizon Project. Together, we can inspire youth to dream about their futures and have fun exploring STEM. Learn more at letstalkscience.ca/horizon.



Virtual Earth Science Summer Camp

For the first time ever, Mining Matters hosted a virtual summer camp, which ran throughout the last few weeks of summer. Campers engaged in interactive educational activities as they explored Earth science concepts, such as mineral and rock identification, the rock cycle, and the layers of the Earth. They participated in science experiments, games and crafts and learned about the mining cycle, discovered the properties of minerals and metals, and participated in scavenger hunts to make the connection between mineral resources and the things they use every day.

Building Mineral Literacy During a Pandemic

This past year, the world entered one of the most challenging times of the last century. The COVID-19 pandemic put a halt to many travel plans, social functions, programs and events. Despite these new circumstances, the Mining Matters mission to educate did not waiver.

This situation motivated us find new ways to deliver programs and engage our audiences. Our staff members put their heads together to create new content on social media and to develop and adapt activities that could be accessed and played online, including a virtual escape room. We ran a virtual summer camp, shared DIY versions of several of our activities on our website, and contributed mineral resources kits and activities to Frontier College Summer Literacy Camps in Indigenous communities. The camps support student success by complementing the formal education system and responding to a need for quality learning supports in rural and remote communities. Approximately 450 youth in 15 First Nation communities across three provinces benefited from Mining Matters kits this summer. In addition, some of our Indigenous community partners received at-home activity kits.

This academic year, we are committed to delivering student and teacher workshops online and plan to participate in virtual outreach events. We will also continue to share our activities and updates on social media to keep you engaged with educational Earth science materials. Although our situation is unusual, unfamiliar, and unknown, we look forward to staying connected and continuing to build mineral literacy.



KITCO[®] MEDIA



Thanks to Kitco Media

We were invited by Kitco Media to promote Mining Matters resources on their website. Our contributed commentary showcases new games and online activities that we developed during the pandemic and shares ideas for learning while physical distancing. We would like to say a big thanks to Kitco Media for using your platform to promote mineral resources education. For our full contributed commentary, visit Kitco.com.

To request content from Mining Matters please email shahn@miningmatters.ca.

Mining and Microbes! Who lives in the water?

Engaging students through active learning and incorporating real-world issues are effective ways to pique interest in science and the environment.

We were excited to partner with the Lassonde Institute of Mining at the University of Toronto to deliver a new workshop titled “Mining and Microbes! Who lives in the water?”

Mining and Microbes! is a free hands-on workshop that explores the connections between water, sustainability and the mining industry. The workshop illustrates how the mining industry and water researchers collaborate to better understand and protect our aquatic ecosystems. Each workshop puts Grade 7 and 8 students into the role of an aquatic scientist, where they engage in learning about the industry’s environmental impacts and management of water resources.

Students make the connection between the pH and micro-organisms that thrive in alkaline, neutral and acidic aquatic environments. They also learn the importance of ensuring that water is healthy before it re-enters the local environment and complete an experiment that mimics neutralization of acidic waters that would happen at a mine site.

Fifteen *Mining and Microbes!* workshops were delivered within the Greater Toronto Area by University of Toronto researchers in the Mine, Water, and Environment Research Group. Mining Matters delivered an additional seven workshops as part of our programming in Nunavut, Ring of Fire communities, and Newfoundland and Labrador. In total, the workshops reached 509 students and 22 teachers.

Joined by researchers from the University of Toronto, we also used the *Mining and Microbes!* activity at a learning station during the Mining Matters education program at the 2020 PDAC Convention. The convention program reached another 59 high school students and *Mining and Microbes!* ranked highest among the activities in the student evaluations.

Mining Matters thanks all the volunteer researchers from the Lassonde Institute of Mining for sharing this series of activities with us. It is an exciting collaboration to demonstrate practical science in sustainability and environmental monitoring, and introduce students to role models in scientific research.



YOUR FUTURE: OPPORTUNITIES TO EXPLORE!

Metallurgical Engineer	Human Resources Manager	Mine Designer
Diamond Driller	Environmental Officer	
Exploration Geologist	Environmental Technician	HIRED
Community Affairs Manager	Minerals Processing Operator	Mineral Exploration Pilot
Heavy Duty Mechanic		Underground Miner

How to win? Diamond [X] Corners [X] Diagonal 1 [X] Diagonal 2 [X] Cross [X]

Bunibonibee Cree Nation

In early October, Mining Matters travelled to Bunibonibee Cree Nation, a small community in Northern Manitoba, for the first time. We delivered a two-day *Mining Rocks* Earth Science Program sponsored by Adia Resources. The program covered many topics including rocks and minerals, mineral exploration and mining, and environment and sustainability.

Students participated in several different activities. The popular Cookie Mining activity taught students about the mining cycle and sustainability through “mining” a chocolate chip cookie. Another favourite was Career Bingo in which students learned about the different career opportunities in the minerals industry through a game of bingo. They would yell, “I’m hired!” when one of four bingo patterns was completed.

We also delivered a teacher workshop to provide teachers with resources and ideas for delivering curriculum related to rocks and minerals.

The program reached 64 students in Grades 6 and 8 and was very well received. Feedback from the program showed that 100 per cent of participants found the program interesting and learned something new and 82 per cent stated that they might consider a job in mineral exploration or mining.

WHERE challenge

Sponsored by Teck

Water • Hazards • Energy • Resources • Environment

We asked and you answered!

Hundreds of students between the ages of 9 and 14 rose to the WHERE Challenge last year. The WHERE Challenge is a national contest endorsed by the Canadian Earth sciences community that motivates students to explore the fields in which geoscientists work: Water, Hazards, Energy, Resources and the Environment. The contest asks students to submit a project that answers the questions, "What on Earth is in your stuff?" and "WHERE on Earth does it come from?"

It is designed to help students understand the importance of non-renewable resources and their applications in daily life. The contest ignites students' curiosity about the origins of everyday items and encourages them to explore the mining, energy and environmental sectors for possible career opportunities. The WHERE Challenge is a great way to combine classroom learning with real world relevance, curiosity with practical research, and creative ideas with production technology.

Our staff travelled across the country to deliver 49 workshops that invited students to participate in the contest. We engaged 1,139 students in our WHERE Challenge presentations that had participants learning about the

difference between metallic and non-metallic minerals. We also engaged individuals at public outreach events with hands-on activities that show the ways in which rocks and minerals are used every day.

In response, we received entries in a range of formats – from poems to videos to comic strips – that demonstrated a high level of creativity. Winning submissions discussed the non-renewable resources used to make bicycles, uses of aluminum, and how iron ore is mined. Thanks to all those who participated. Winning entries can be viewed at earthsciencescanada.com/where.

Entries are received annually from across Canada and a volunteer judging panel made up of industry and Earth science partners selects winners in each of the three project categories – Multimedia, Graphic Art and Literary – awarding thousands in cash prizes.

We would like to say a very special thanks to last year's judges and to Teck Resources Limited for having sponsored the contest for the past three years.

The 2020-2021 contest is now underway.

This contest is successful with the enthusiastic and continuous support of the industry. Mining Matters requires industry members to join our judging panel. Please visit our new WHERE Challenge Judges' Registration Form at MiningMatters.ca to register.

Other ways your support can make a difference in the contest:

- Share information about the contest with colleagues, family, friends and your social media network.
- Help a local educator or youth leader with the Challenge in their classroom or club.
- Encourage youth to participate.
- Contact Mining Matters to receive resources so you can deliver a WHERE Challenge workshop of your own at your local school or library.

To learn how you can participate in the current WHERE Challenge or to request a workshop, please email wherechallenge@miningmatters.ca.





Connecting the SDGs to Mining and Earth Science

During the spring, Mining Matters initiated the development of a workshop connecting Earth sciences and the minerals industry to the United Nations Sustainable Development Goals (SDG). The 17 goals seek to address issues, such as poverty, inequality, climate change, and environmental degradation. The SDGs also aspire to promote peace and justice.

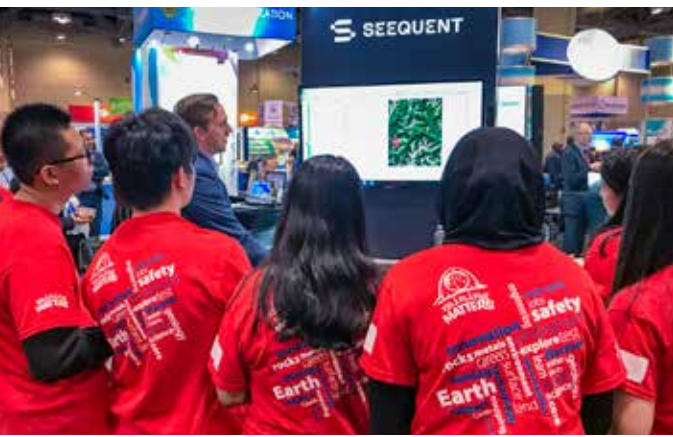
The United Nations website describes the SDGs as “the blueprint to achieve a better and more sustainable future for all.”

Canada’s minerals industry plays a key role in helping society meet these objectives. Mineral resources are critical in the pursuit of reducing carbon emissions. For example, nickel, steel, zinc, and other alloys and metals are used in developing green technologies, including batteries, solar panels, and wind turbines. Earth science is also important in advancing renewable energy, managing water resources, understanding geological hazards, mitigating contaminations, educating the public, and informing policy.



The two-hour workshop will be designed for intermediate students and allow teachers to select the SDGs most in line with what they are currently teaching. Workshops will explore relationships between the SDGs and shed light on how different aspects of Earth science can address these goals.

Due to COVID-19 rules and regulations, we are exploring opportunities to adapt these workshops for online delivery.



PDAC Convention Education Program

In March, Mining Matters returned to the PDAC Convention – the world’s premier mineral exploration and mining event. The Metro Toronto Convention Centre buzzed with recent graduates, eager to jumpstart their careers, and mining executives looking for their next investment. In the North Building, amid the hustle and bustle, you could hear the voices of curious students during the Mining Matters education program.

High school students from Dr. Norman Bethune C.I. participated in exciting activities that involved examining core samples and learning about the optical properties of minerals. In addition, they toured the Trade Show, learning about different aspects of the industry and exploring career opportunities. Participants left the convention with a better understanding of the importance of the mining industry and the applications of rocks and minerals in our daily lives.

Twenty teachers also attended, excited to expand their knowledge of geology and the minerals industry, and add ideas to their classroom tool kits.



We would like to thank the Prospectors & Developers Association of Canada and the following companies and individuals for inspiring the next generation of geoscientists:

- Beth McLarty Halfkenny (Carleton University, Department of Earth Sciences)
- Boart Longyear
- Corina McDonald and Jeff Sage (University of Waterloo Earth Sciences Museum)
- Duralite Diamond Drills Ltd.
- Geo Labs
- Judy Tutcher (Dr. Norman Bethune Collegiate Institute)
- Karl Bjorkman, Prospector
- Lauren Twible and Sarah Kumar (University of Toronto, Lassonde Institute of Mining)
- Laurentian University
- Ontario Ministry of Energy, Northern Development and Mines
- Noront Resources Ltd.
- Seequent
- Tobias Roth (Laurentian University, Department of Earth Sciences)
- University of Waterloo



Photo Credit: billbradenphoto
Courtesy of Gold Terra Resource Corp.

Teaching Teachers

In 2019–2020, we continued to deliver workshops and presentations at various educator events, creating opportunities to interact closely with teachers and share Mining Matters resources. We successfully reached more than 700 teachers collectively at the Ontario Association for Geographic and Environmental Education (OAGEE) conference held in Ottawa, the Québec Provincial Association of Teachers (QPAT) conference in Montréal and the Nova Scotia Science Teacher Conference.

Our Teacher Training and School Programs Coordinators engaged teachers at the Mining Matters booths and delivered workshops, in both English and French, that focused on mining and the environment. Teachers examined rocks and minerals, investigated the importance of these resources in their lives, and discovered the benefits and costs of using products made from mined materials. Through hands-on activities that can be replicated in the classroom, they tested the physical properties of minerals, learned what clues to look for in rocks to determine how they were formed, gained an understanding of the three rock groups, and explored the rock cycle.



Photo Credit: billbradenphoto
Courtesy of Gold Terra Resource Corp.

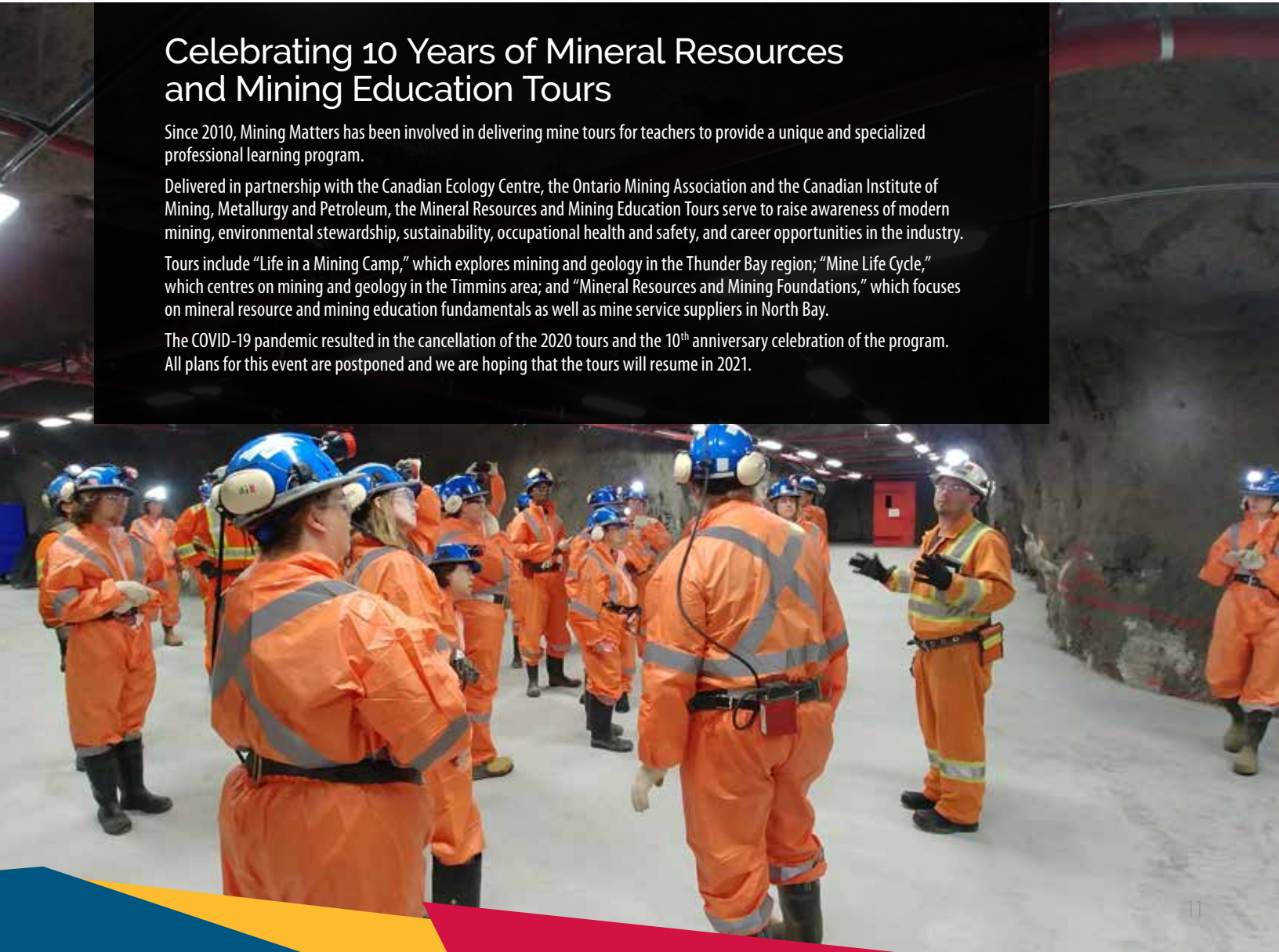
Celebrating 10 Years of Mineral Resources and Mining Education Tours

Since 2010, Mining Matters has been involved in delivering mine tours for teachers to provide a unique and specialized professional learning program.

Delivered in partnership with the Canadian Ecology Centre, the Ontario Mining Association and the Canadian Institute of Mining, Metallurgy and Petroleum, the Mineral Resources and Mining Education Tours serve to raise awareness of modern mining, environmental stewardship, sustainability, occupational health and safety, and career opportunities in the industry.

Tours include “Life in a Mining Camp,” which explores mining and geology in the Thunder Bay region; “Mine Life Cycle,” which centres on mining and geology in the Timmins area; and “Mineral Resources and Mining Foundations,” which focuses on mineral resource and mining education fundamentals as well as mine service suppliers in North Bay.

The COVID-19 pandemic resulted in the cancellation of the 2020 tours and the 10th anniversary celebration of the program. All plans for this event are postponed and we are hoping that the tours will resume in 2021.



Mining Matters Far and Wide!

- Teacher Training and School Programs
- Outreach Programs
- Indigenous Communities Education and Outreach Programs
- Partnership Programs



Yellowknife
NWT

Photo Credit: billhradenphoto
Courtesy of Gold Terra Resource Corp.



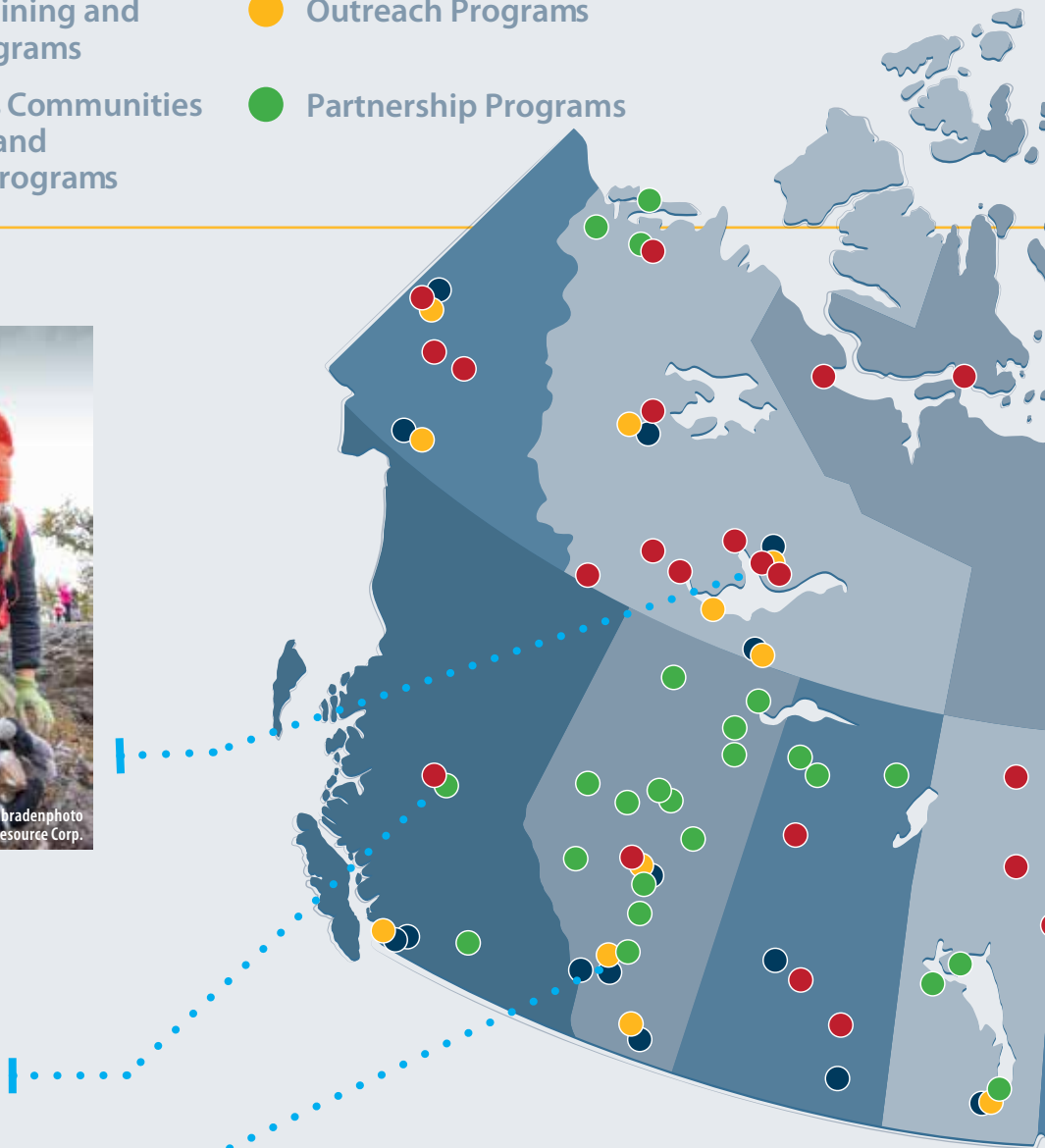
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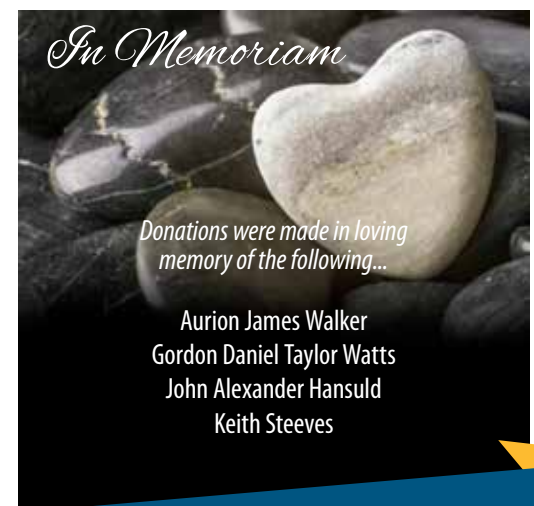


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Noront Resources Ltd.
Ontario Mining Association

Ontario Ministry of Energy,
Northern Development
and Mines
Ontario Stone, Sand and
Gravel Association
Pablo Bazan
Printbrain Inc.
ProForma Adam Productions
Quartermain Earth
Science Centre
Québec Precious Metals
Radisson Hotels
RBC Dominion Securities
Redpath Museum
Rideauview Contracts
Rilea Kynock
Ripley's Aquarium of Canada
Royal Ontario Museum
Saskatchewan Mining
Association

Science Literacy Week
Science North
Seequent
Shirley Levene
Silver Birch Centre
Sudbury INO (Glencore)
The Occurrence
Toronto District School Board
Treasure Kave
University of Saskatchewan
University of Toronto,
Lassonde Institute of Mining
University of Waterloo Earth
Sciences Museum
Upper Canada Stone
Westin Harbour Castle
wintranslation
Yukon Women in Mining

Contributions were received in our 2019-2020 fiscal year. Every effort has been made to ensure the accuracy of this list. If an error or omission has been made please accept our sincere apologies and contact us in order to correct.

WHAT'S NEW?

Exploring Careers through Virtual Reality

Over the next decade, more than 70,000 jobs in the Canadian mining industry will need to be filled. With such a rapidly growing demand for workers, it is important to make the next generation aware of the new opportunities available to them. That's why Mining Matters was pleased to work with CareerLabsVR – a tool that allows job seekers to gain insight into different careers – in the design of three VR experiences related to careers in mining. VR is a simulated experience that allows you to mimic real-life scenarios or be immersed into an imaginary one. It is often used in video games and can be applied to education, such as military training.

Mining Matters was invited by the CareerLabsVR team to contribute ideas to their mining-related VR experiences: heavy equipment operator, mine engineer and process engineer. The simulations allow you to act as though you are really on the job; when you put on the headset, you are immediately transported to a mine site where you can practise driving a multi-tonne vehicle in an open pit mine, fly a drone to scout a mine location, monitor process outputs, and even set off a blast. In each simulation, you are guided by an instructor who speaks to you through a wrist communicator and directs you to perform tasks for the job – albeit simplified to account for the time limit, skills and medium.

We are hopeful that this collaboration will continue with career simulations in mineral exploration and environmental science. We look forward to incorporating this technology into our programs and inspiring participants to try a career in mining.



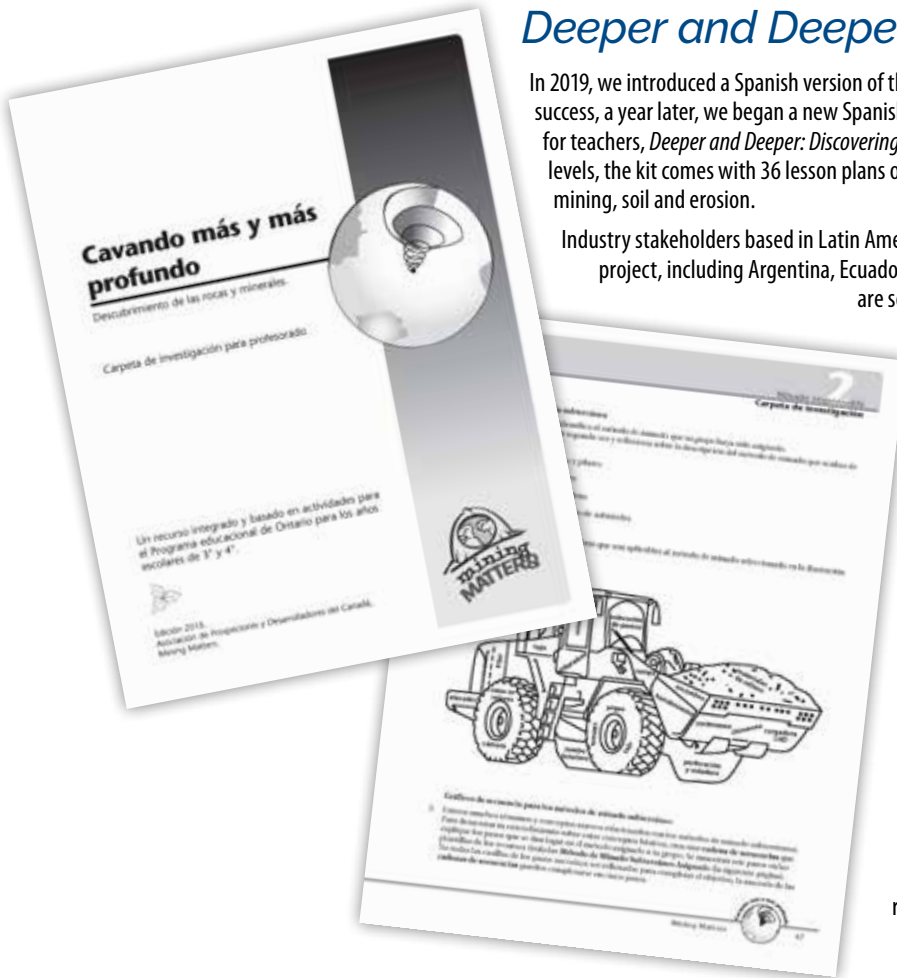
Deeper and Deeper in Spanish

In 2019, we introduced a Spanish version of the Mining Matters Activity Book. Due to its success, a year later, we began a new Spanish translation project of our popular resource kit for teachers, *Deeper and Deeper: Discovering Rocks and Minerals*. Aimed at elementary grade levels, the kit comes with 36 lesson plans on topics related to rocks, minerals, responsible mining, soil and erosion.

Industry stakeholders based in Latin American countries have expressed interest in this project, including Argentina, Ecuador, Guatemala, Peru, Colombia and Mexico. We are seeking financial support to produce student visuals, as well as video tutorials that demonstrate to teachers how to implement this resource.

Mining Matters would like to thank the following people for their invaluable support on this project: Ilianne Robredo, Executive Team Administrator of Bluestone Resources Inc.; Pablo Boyanovsky Bazan, Technology in Education Specialist, Mining Awareness Program of Ideas de Meseta (IDM) Foundation, Patagonia, Argentina; and Nathan Monash, Vice President, Business Sustainability of Lundin Gold. Through providing translation, producing Spanish materials, and connecting Mining Matters with interested parties, their support has been key to moving this project forward.

We look forward to sharing this resource with teachers in Latin America and making mineral resources education available to more students.



Impala Supports Student Programs in Thunder Bay

Thanks to a \$20,000 donation from Impala Canada, Mining Matters was able to deliver ten student workshops in Thunder Bay, a city that's home to a number of exploration projects. We engaged 224 students from six schools with exciting activities that taught them how to identify the differences between metallic and non-metallic minerals. They also learned about the personal protective equipment used by miners and geologists and what clues to look for when trying to identify the three rock groups.

"[The workshop] was interactive and informative," said one teacher. Another said that she would love to have this program every year.

The funds allowed us to provide valuable educational resources for public and catholic schools in the city. Teachers also received an additional resource bundle that included print materials, mineral and rock samples, testing equipment, and a class set of geodes.

This donation will be used to support more student and teacher workshops in the Thunder Bay area next year.



Making Resources Accessible to the Blind and Partially Sighted

Mining Matters worked with the Canadian National Institute for the Blind (CNIB) Foundation to develop educational resources in braille. Together, we adapted our existing lessons and activities so that they could be accessible to those who are blind or partially sighted.

Volunteers from the CNIB helped our staff learn the braille alphabet and taught us how to use a braille (a device similar to a typewriter that types by punching the raised bumps needed for braille). With their help, we created braille versions of activity materials, such as our Activity-Concern-Solution matching cards. We used our 3-D printer to create a set of dice with braille for our Human Water Cycle activity.

These small changes made a big impact, allowing us to deliver quality programming to a wider range of students. Going forward, students with and without vision impairments will be able to participate in the same activities.

Mining Matters thanks the CNIB for donating their time and expertise to this important initiative.



Rocking Out in Northern Canada

Northern Canada provides a great backdrop for Mining Matters programs. From the Yukon Gold Rush, to diamonds and critical minerals in the Northwest Territories, to Nunavut's millions of ounces of mined gold, the territories and Nunavik have proven to be rich in mineral resources, making it a relevant topic to its residents.

Mining Matters returned to each of the three territories and northern Québec this past year to deliver *Mining Rocks* Earth Science Programs. The program teaches youth about the importance of Canada's mineral resources, Earth science, environmental science, the mining cycle, and careers in the minerals industry.

In both indoor and outdoor settings, students learned foundational concepts in geology through challenging and engaging hands-on activities. They identified minerals based on their physical properties, matched items to the minerals from which they are made, and worked in teams to build a water filtration system. Participants also had opportunities to meet industry and government employees and learn about the work they do.

In the Yukon

The Yukon Geoscience Forum and Trade Show took place last November in Whitehorse. In addition to celebrating the resource industry around the territory, the conference engaged the community and students through outreach programs.

At the forum, Mining Matters worked with the Yukon Geological Survey to engage visitors at our booth. Together we delivered a virtual landscape model, Product Matching, Mineral Discovery and Jewellery Making. The event reached 440 students, teachers, and members of the public.

During Mining Week celebrations in the spring, Yukon Women in Mining adapted its in-person plans by launching a virtual program to raise awareness of the importance of the minerals industry in the territory. Online educational resources were made available to teachers, parents, students and the public, covering all areas of Yukon's mining industry. Mining Matters contributed to the initiative by providing a series of learning activities that were included in the Virtual Mining Week Activity Book. In addition, we collaborated with the Yukon Chamber of Mines to relaunch our WHERE Challenge contest specifically for the territory to engage students in answering the questions, "What on Earth is in your stuff?" and "WHERE on Earth does it come from?" Participants were encouraged to get to know what mined resources could be found in their everyday items and how many of these resources come from Canada and their home territory.

Virtual Mining Week celebrations were also launched in Nunavut and the Northwest Territories. Many thanks to our education partners for the opportunity to participate: Yukon Women in Mining, Yukon Geological Survey, Yukon Chamber of Mines, Northwest Territories and Nunavut Chamber of Mines, Mining North Works, and the Government of the Northwest Territories.



Photo Credit: billbradenphoto
Courtesy of Gold Terra Resource Corp.



Photo Credit: billbradenphoto
Courtesy of Gold Terra Resource Corp.



Photo Credit: billbradenphoto
Courtesy of Gold Terra Resource Corp.

Collaborations in the Northwest Territories

Mining Matters partnered with the Government of the Northwest Territories, Gold Terra Resource Corp. (formerly TerraX Minerals), and the Northwest Territories and Nunavut Chamber of Mines to deliver mineral education programming in Yellowknife and the North Slave Region. We saw 206 Grade 4 and 7 students across 13 different classes in Yellowknife, Behchoko, N'Dilo and Dettah.

The program was delivered in English and French and focused on sustainable mining, the mining cycle, and careers. Our partners from Gold Terra and the NWT and Nunavut Chamber of Mines provided insightful talks about the mining industry and related careers. Students also participated in a geological field trip led by staff from Gold Terra during which students explored their local rocks and minerals firsthand.

During the last week of November, Mining Matters attended the Resource and Development Energy Information event in Fort Smith where we reached out to students and teachers and promoted our WHERE Challenge contest. At the Yellowknife Geoscience Forum, we delivered more teacher workshops and a presentation, reaching over 60 delegates, teachers and Rotary Club members.



Agnico Eagle Partnership in Nunavut

In Nunavut, we continued to work with Agnico Eagle Mines and the school leadership in the hamlets of Rankin Inlet and Baker Lake to deliver unique school programs that engaged 344 youth and community members.

We adapted the program to align with Nunavut's science curriculum for Grades 7 to 9 under the topics of Planet Earth, Mechanical Systems, Light and Optical Systems and Environmental Chemistry. By aligning with the curriculum, we are able to scaffold the program content. Each year, students will continue to build on their prior knowledge. Students showed great interest in the program and demonstrated understanding of the real-world applications of mining.

Thank you to Agnico Eagle Mines for providing our team with valuable training on cultural awareness and travelling in Nunavut and the wonderful opportunity for Mining Matters team members to tour the Meadowbank operation.



Teaming Up with Glencore Raglan Mine

Mining Matters joined Raglan Mine for their environmental forum in Kangiqsujaq, a small village located in Nunavik, the northernmost part of Québec.

Our staff facilitated hands-on activities as we discussed the mining cycle, with a focus on reclamation. We also emphasized the importance of mine water management through a groundwater modelling activity that teaches students about porosity, permeability and how water and contaminants can move through an aquifer.

An after-school community event invited community members to make jewellery out of copper wire and amethyst. During the event, a local artist worked with the students to create carvings out of soapstone, connecting the activity to Inuit traditions.





Ring of Fire Partnership with MENDM

Partnerships are a pillar of Mining Matters. Without the help and support of communities, educational organizations, government and industry, we could not build mineral literacy to the extent that we do.

This year marks the ninth consecutive year of Mining Matters partnering with the Ontario Ministry of Energy, Northern Development and Mines (MENDM) to deliver programs in Ring of Fire communities. Thanks to MENDM's support, Mining Matters facilitated Earth science workshops in 14 First Nations communities and to more than 600 students and teachers across Northern Ontario. We returned to the First Nation communities of Nibinamik, Constance Lake, Ginoogaming, Long Lake #58, Attawapiskat, Neskantaga, Eabametoong, Aroland, Sandy Lake, Deer Lake, Fort Albany, Kashechewan, Keewaywin, and Webequie. Unfortunately, our program in Marten Falls was cancelled due to the pandemic.

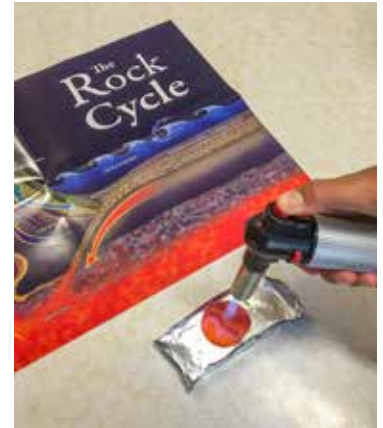
Favourite activities among participants included Starburst Rock Cycle, Geode Breaking and Conveyor Belt Engineering Challenge.

We were also pleased to offer evening events in each community, reaching over 200 community members. These events are an opportunity to engage with youth, adults and elders outside the classroom, and thank them for welcoming us into their community. Together, we enjoyed activities that embrace Indigenous traditions and connect to Earth science.

We are grateful for these opportunities to share our passion for Earth science and provide quality education that enhances the curriculum. Mining Matters thanks MENDM for their continued support and commitment to STEM education. With the new agreement between the provincial government and Ring of Fire communities to construct a road into the remote region, geoscience education in Northern Ontario is more important and relevant than ever before.



Photo Credit: billbradenphoto
Courtesy of Gold Terra Resource Corp.



After
the
program

94%

found the program interesting

89%

said they were more interested
in STEM and want to learn more
about these subjects

70%

indicated that they are thinking
about a job/career in mineral
exploration or mining

94%

found rocks, minerals, metals and
mining to be important in their daily
lives compared to 85% who thought
this way prior to the program

71%

are thinking about a job/career
in science and engineering

Mining Matters Alum: Where are they now?

Since 1994, Mining Matters has seen many staff members come and go. Each one has contributed valuable and unique ideas that have made Mining Matters the organization it is today. While we never like seeing such talented individuals leave, we couldn't be happier for our former employees as they take on new challenges in their new roles. It is also a testament to the type of work experience that Mining Matters offers.

We want to celebrate a few of the staff we have had to say goodbye to in recent years and highlight their new achievements.



Kendra Zammit, District Geologist, Resident Geologist Program, Ontario Geological Survey, Ministry of Energy, Northern Development and Mines

Kendra joined us as intern in 2017 after working at the Ontario

Geological Survey and completing her undergraduate degree. Though her time at Mining Matters was brief, she made a great impact delivering *Mining Rocks* Earth Science Programs for our partnership with the Ontario Ministry of Energy, Northern Development and Mines. She was the recipient of the Mary-Claire Ward Geoscience Award at the 2020 PDAC Convention.

"Working with the Mining Matters team provided me with valuable experience teaching in remote First Nations communities in Northern Ontario. These experiences helped improve my communication skills and exposed me to different perspectives on the mining industry. I'm currently a District Geologist. . . I monitor exploration and industry activity in the Sault Ste. Marie area and recommend potential projects of interest for mineral exploration and development." – Kendra Zammit



Rilea Kynock, Geologist, Atlantic Gold, A St. Barbara Ltd. Company

Rilea came to Mining Matters full of ideas and eager to try new things. She helped us expand our promotion of the WHERE Challenge by delivering WHERE workshops in multiple provinces, particularly on the Atlantic coast. After working as an instructor for Mining Matters, Rilea became

a geologist for Atlantic Gold – St. Barbara Limited at the Touquoy Mine in Nova Scotia, where she continues to work.

"My entry to Atlantic Gold came from opportunities available through Mining Matters to network with leading industry professionals. My time is shared between field work and the office, constructing assay data into models, providing sample QA/QC, and delineating ore boundaries. Communication and planning skills strengthened by Mining Matters were highly transferrable to a production position where collaboration is essential.

From Mining Matters, I learned about sustainable mining methods and business practices, including the Canadian standard policies around the environment and social effects before they directly related to my career. Travelling to remote communities and listening to local people's positive impacts from mining inspired me to keep pursuing the industry to connect with the public and help build prosperity in rural regions. My experience with instructing and outreach became an asset for my company to reach out to local organizations and increase our positive community presence. I would recommend working with Mining Matters to anyone considering a career in mining and wanting to understand the inherent community aspect of our industry." – Rilea Kynock



Mark Paddey, Resource Pathfinder, Client Service and Community Relations, Industry, Tourism and Investment, Government of the Northwest Territories

Mark joined us after graduating from McMaster University in Earth & Environmental Science. After 18 months of delivering education and outreach programs with Mining Matters, Mark went on to work for one of our partners, the Government of the Northwest Territories.

"Mining Matters was a phenomenal opportunity for a recent grad. I was fresh out of school and looking to break into the minerals industry. Armed with a geoscience degree and a love of education, I was sent to the farthest corners of Canada, where for many people, the minerals industry wasn't a talking point, but a way of life. I learned how to effectively engage with the public and better communicate complex concepts in plain language. I was introduced to countless friends, mentors, role-models, and culture and through it all, absorbed more information about the minerals industry in Canada than I would have thought possible. Though I may not have realized it at the time, these experiences would form the foundation of my career.

Mining Matters introduced me to Yellowknife (the city I now call home) and opened my eyes to the opportunities that exist in the world of geoscience outside of the obvious role of a geologist. Since leaving Mining Matters, I have been working with the Government of the Northwest Territories, providing advice and support to both the minerals and petroleum industries as well as local communities to encourage responsible and sustainable resource development, and spur economic activity in the NWT. In other words, if only one in a thousand exploration projects ever becomes a mine, then it's my job to improve those odds. I'm fortunate to be working with an incredibly experienced team, have opportunities for mentorship, and no two days at work that ever look the same. Mining Matters not only played an integral role in leading me to this opportunity, but also in equipping me with the skills and experiences I needed to excel." – Mark Paddey

For more information about Mining Matters employment opportunities, please visit: miningmatters.ca/about-us/join-our-team

Kinross Gold Supports Programs in the GTA

For the third consecutive year, Mining Matters delivered free workshops to underserved schools in the Greater Toronto Area and neighbouring cities.

Sponsored by Kinross Gold, *Rocks + Kids = Opportunities* is a program designed to align with the “Rocks, Minerals and Erosion” topic in the Grade 4 science curriculum through hands-on exploration. Students are also given an opportunity to learn about potential careers in Earth science and the minerals industry.

In 2019-2020, our team delivered 27 workshops to 688 students and teachers in priority neighbourhoods from Hamilton to Scarborough. Workshops are tailored to each class; classroom teachers are given a selection of activities to choose from and we modify the activities to match the prior learning of the students. In addition, teachers are left with posters and mineral samples to support them in teaching the remainder of the unit.

The program continues to receive positive feedback from our partners, including the Toronto District School Board whose partnership is greatly valued and will continue into the 2020-2021 academic year. Mining Matters would like to thank Kinross Gold for their generous support in making this program possible.

Working with the Outland Youth Employment Program

Mining Matters was excited to continue our collaboration with the Outland Youth Employment Program (OYEP). Over the summer we adapted in-person program delivery by providing the OYEP staff with educational resources and training to enable delivery of Mining Matters activities to their participants. We produced video tutorials that demonstrate how to complete different challenges and activities.

Programming was delivered at five camps in Ontario (Mink Lake, Sandbar, Esker Lakes), Manitoba (Egg Lake), and British Columbia. Participants explored career opportunities and gained foundational knowledge in Earth science and mineral resources through a variety of activities that focus on geoscience, engineering, the environment and sustainability. One favourite was the Headframe Engineering Challenge where students built a headframe out of straws, masking tape and paper. The objective was to build a strong enough structure to be able to lift as many marbles off the ground as possible. Other fun activities like soapstone carving were also included in the program.

OYEP offers a national network of land-based education, training and work opportunities for high school aged Indigenous youth. The program has provided hundreds of Indigenous youth with income and learning opportunities over the past two decades.



Connecting Curriculum to the Real World for Students and Teachers

Field trips bring Earth science to life and help students make connections between what they are learning in class and the real world. They get to see where some of the things they use every day come from and become aware of the wide variety of career opportunities.

Mining Matters offers a Field Trip Subsidy Program to help teachers take their students on incredible trips to stone, sand and gravel, mining and geoscience venues. The subsidy helps cover entry fees and transportation costs to these locations.

Last year, Mining Matters was able to support six schools across the country with the program. We had 216 students, and 22 teachers and adult chaperones benefit from the subsidy program. Trips included visits to museums and quarries, as well as tours of local areas containing a rich geological history.

“Many students expressed great excitement throughout the tours, getting to see things that few people get to see,” shared Rob Millard, a teacher at Notre Dame Catholic High School and field trip subsidy recipient. “All of this would not have been possible without the support of Mining Matters. . . the great work they do and the opportunities that the subsidy provides.”

Another four schools totalling 249 students and 25 adults had trips scheduled, but had to cancel due to COVID-19.

Thank you to Tri Origin Exploration Limited and Midland Exploration Inc. for making this program a success.

Due to the current global situation, Mining Matters has had to put the Field Trip Subsidy Program on hold, but we look forward to helping teachers and students access fantastic trips in the future and increasing the number of students provided with hands-on, real-life exposure to the world of rocks, minerals, metals, mining, and geoscience. We need to build more support for subsidies. If you would like to be a sponsor, please contact mfraser@miningmatters.ca.



A group of teachers explore the Laffèche Caves near Gatineau, QC.

groundWORK 2020-2021

You can now download a copy of the 2020-2021 edition of our *groundWORK* newsletter at MiningMatters.ca. It features articles, activities and resources for educators. The issue focuses on the importance of iron in everyday life, the minerals and metals used in telecommunications, and the important role that the mining industry plays in plant health. We highlight upcoming professional development programs, including teacher conferences and the 2021 Mineral Resources and Mining Education Tours. Plus, teachers have access to resources to help support virtual learning, including apps, puzzles, websites, videos, posters and podcasts.

The newsletter also includes instructions for a rock and mineral scavenger hunt for elementary students and a conveyor belt engineering challenge for secondary students.

Indspire: National Gathering

The 2019 Indspire conference *National Gathering* took place in Toronto in November, bringing together Indigenous educators and those who work in Indigenous communities across Canada to share ideas and resources. A Mining Matters booth promoted our *Mining Rocks* Earth Science programs and shared teaching materials. Our staff also attended several workshops to learn how to better integrate Indigenous worldviews into STEM education.

Since then, our team has worked diligently to refine our activities and integrate best practices that will allow our Indigenous participants to better relate to the program content. We have continued to translate our posters into Cree, Oji-Cree and Ojibway. We also adapted our Aquatic Ecosystems activity to tailor to our audience in Northern Canada by integrating organisms you would find in the north.



Going Public

We always appreciate opportunities to engage with people in public settings. It's so encouraging to see kids and adults light up at a Mining Matters exhibit as they marvel over rare mineral specimens and learn about the relevance of Earth materials in their lives.

This year, we were present at gem and mineral shows in Ancaster; London; Waterloo; and Lethbridge, Alberta. We also engaged the public at Québec Mines + Énergie and Cool Science Saturday in Ottawa.

Crowds oohed and aahed as we demonstrated how copper conducts electricity and explained how we brush our teeth with minerals. Visitors took part in matching pictures of old mine sites during operation to images of the same site after reclamation.

Travelling from province to province allows us to learn about the geology in each of those regions as we connect with local people. We look forward to being able to return to these places in the future.

Thank you to the following institutions for your valued partnerships:

- Association of Professional Geoscientists Ontario Education Foundation
- Canada Science and Technology Museum
- Canadian Museum of Nature
- Carleton University, Department of Earth Sciences
- DiscoverE, University of Alberta
- Frontier College
- Fundy Geological Museum
- Girl Guides of Canada Manitoba Branch
- Laurentian University, Department of Earth Sciences
- MineralsEd
- Ontario Mining Association
- Quartermain Earth Science Centre
- Redpath Museum and the Department of Earth and Planetary Sciences, McGill University
- Royal Ontario Museum
- University of Saskatchewan, Department of Geological Sciences
- University of Waterloo Earth Sciences Museum



Mining Industry Faces Off at the Mining Matters Hockey Tournament

The 13th annual Mining Matters Hockey Tournament was held on February 29th. Fourteen teams took to the ice in support of mineral resources education, playing three games each in a round-robin style tournament.

All teams put in a solid effort, but only two could claim victory. Congratulations goes out to Kirkland Lake Gold for taking home the Championship Trophy and to New Gold for winning the Fossils Division.

Thanks to all our teams and sponsors for making the 2020 tournament a resounding success and a special thanks to our Founding Sponsor, Caracle Creek!



Mining Matters Silent Auction

At the 88th PDAC Convention, Mining Matters hosted a silent auction to raise funds for educational programs about Earth science. Thanks to the generous donations of individuals, corporations and community partners, we successfully raised over \$10,000. If you have an item you would like to donate to our next auction, please email Sarah Hahn at shahn@miningmatters.ca.



We Have Moved!

In February, Mining Matters was unexpectedly required to relocate offices. We embraced the opportunity and realized operational efficiencies by consolidating all storage needs under one roof.

Please make note of our new address for future mail:

1102 - 150 Ferrand Drive
Toronto, ON M3C 3E5

Thank!
you.

Thanks to Outgoing Board Members William Roscoe and Edward Thompson

Mining Matters has been extremely fortunate over the years to have volunteer board members who put their heart and soul into furthering our mission, William Roscoe and Edward Thompson being prime examples. The staff at Mining Matters are sorry to say goodbye to these two outgoing board members and extend our deepest gratitude for their hard work, expertise, innovative thinking, leadership, and philanthropic efforts, all of which have been instrumental in guiding our mission.

Mr. Roscoe, Ph.D., P.Eng., recently retired from RPA, a Toronto-based geology and mining consulting firm that he co-founded in 1985. RPA is now part of SLR Consulting, a multi-disciplinary advisory firm. He has extensive experience in mineral exploration, mineral resource estimation, and valuation of mineral properties. He is Co-Chair of the CIMVAL Committee, which developed standards for valuation of mineral properties in 2003, updated in 2019. Mr. Roscoe leaves the Mining Matters board after 12 years of valuable service. He has been instrumental in providing a strategic vision for our expansion efforts across Canada and in the promotion of industry-education partnerships, encouraging industry members to recognize the importance of our mission.

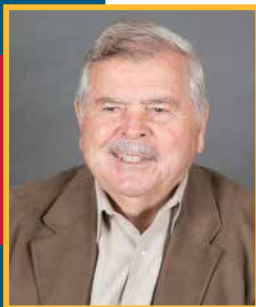
For more than half a century, Canadian Mining Hall of Fame Inductee Mr. Thompson, P.Eng. has contributed to the Canadian mining industry as an explorer, mine developer, company builder, and dedicated supporter of industry causes and associations. He joined the Mining Matters Board of Directors in 2011, but his support and involvement in the organization started long before he joined our board. Mr. Thompson has championed our mandate and provided his invaluable expertise and guidance since our inception in 1994. His belief in furthering Earth science education and imparting knowledge about the mining industry to Canadian youth has led him to raise over \$1,000,000 in support of our programs over the past 25 years.

We wish Mr. Roscoe and Mr. Thompson all the best in whatever ventures they take up next. Wherever they may turn their attention, the people around them will be fortunate, as Mining Matters has been.



"I was a Director of Mining Matters because I believe in the concept of educating young people about the mining and exploration industry, which is so vital to our way of life. It goes a long way to balance the negative information they may be exposed to."

*William Roscoe, formerly Chairman Emeritus
– RPA Inc.*



"Educating our young people about the Earth sciences and the contributions that mining makes to our standard of living is key to our sustainable future."

*Ed Thompson, President
– E.G. Thompson Mining Consultants Inc.*



Photo Credit: billbradenphoto
Courtesy of Gold Terra Resource Corp.



How to Donate

Mining Matters is grateful for the contributions of many loyal supporters that have made our goals a reality. Your donation does make a difference! It provides the foundation for our important work and is critical to our ongoing vision of bringing Earth science to life.

As a charitable organization, Mining Matters is able to develop and deliver its programs due to generous financial sponsorship, donations and in-kind contributions from the mineral and aggregate industries, individuals, foundations, corporations and government.

We invited new supporters to take up our cause and current supporters to continue so that we may carry on providing current information about the importance of rocks, minerals, metals and mining in everyday life, and about the diverse career opportunities available in the minerals industry to students, educators and the public.

A charitable receipt will be issued for contributions of \$25 and greater. For more information or to donate, please contact mfraser@miningmatters.ca or call 416-863-6463 ext. 334.

Donating Cash

Cash donations to Mining Matters are always welcome and are eligible for the Charitable Donation Tax Credit (CDTC). In addition, for individuals who have not donated previously to charities, there is the First Time Donor's Super Credit (FDSC). This applies to cash donations, not contributing shares. There are also provincial tax credits, which vary across the provinces.

Donate online today at MiningMatters.ca.

Donating Shares

Donating shares to Mining Matters may be of interest due to the considerable tax benefits that can be realized. The elimination of capital gains on stocks, bonds and mutual funds means that a contribution results in a tax receipt equal to the fair market value of your gift. Rather than being subject to tax on 50 per cent of the gains for shares sold during your lifetime, accrued capital gains on donated shares are exempt from taxes.

To learn more, please contact Durham Sims, Mining Matters Investment Advisor at RBC Dominion Securities at 416-842-3086, 800-561-4468 or durham.sims@rbc.com. Mr. Sims serves in a volunteer capacity with Mining Matters.

Planned Giving

Mining Matters accepts planned gifts. These gifts enable individuals to make larger donations than they could make from traditional methods.

- **Bequests and Wills:** leave a piece of property, securities, cash or percentage of your estate.
- **Charitable Remainder Trust:** irrevocably make a gift through a trust agreement.
- **Endowment Fund:** provides longterm support. The principal remains invested; only the income is spent.
- **Life Insurance:** designate Mining Matters as the beneficiary on a new or existing policy or transfer the ownership of your policy to Mining Matters directly with a pledge to pay the premiums each year.
- **RRSPs/RRIFs:** name Mining Matters as the direct beneficiary of your RRSP/RRIF assets.
- **Securities:** donate bonds, mutual funds, stocks or other types of securities.

When considering a Planned Gift, Mining Matters recommends that you contact your professional advisor so that your legacy gift is tailored to your circumstances.

Who We Are

Mining Matters is a national charitable organization dedicated to educating young people to develop knowledge and awareness of Earth sciences, the minerals industry and their roles in society. The organization provides current information about rocks, minerals, metals, mining and the diverse career opportunities available in the minerals industry. Mining Matters offers exceptional educational resources that meet provincial curriculum expectations, created by educators and Earth science experts.

Mining Matters has reached an estimated 780,000 teachers, students and members of the public since inception in 1994.

Our core educational programs are:

Teacher Training and School Programs

Bringing Earth science to life for students and teachers in classrooms and online across Canada

Indigenous Communities Education and Outreach Programs

Opening a world of opportunities to youth in Indigenous communities

Outreach Programs

Developing an awareness of the mining industry and sparking interest in Earth science learning in people of all ages

Partnership Programs

Building partnerships with museums, schools, STEM organizations, and industry professionals to reach people in all regions of the country

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Lesley Hymers

Manager, Education and Outreach Programs

Vanessa Lee

Coordinator, Education and Outreach Programs

Kelly McBride

Coordinator, Teacher Training and School Programs

Kasey Stone

Coordinator, Bilingual Programs

Instructors and Students*

Joss Field

Instructor, Education and Outreach Programs

Nicholas Kerr

Co-op Student

Samantha Kobak

Instructor, Education and Outreach Programs

Mark Porasz

Instructor, Education and Outreach Programs

Akila Visram

Co-op Student

*2019/2020 Fall and Winter Terms