nwmo news

Nuclear Waste Management Organization

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Inviting feedback on the NWMO's new five-year strategic plan

The NWMO's new five-year strategic plan, *Implementing Adaptive Phased Management 2020 to 2024*, is now published on our website (www.nwmo.ca/implementationplan), and we are inviting public input to help shape our work going forward.

"The implementation of Canada's plan for the safe, long-term management of used nuclear fuel is a collaborative process, and it is important for us to hear from people," said Lisa Frizzell, Vice-President of Stakeholder Relations at the NWMO.

The implementation plan is a living document that is regularly assessed and strengthened through public feedback, advances in science and technology, insight from Indigenous Knowledge, changes in societal values, and evolving public policy.

The current five-year planning period is the first to look beyond our expected site selection date of 2023. This important milestone will bring to an end the site selection process we initiated in 2010. It will also mark the beginning of a new series of activities, such as implementing partnership agreements with host communities; furthering the safety case for the identified site; constructing a Centre of Expertise; preparing for and participating in regulatory processes; and getting ready to move our operations to the site that is selected.

Please forward your comments (www.nwmo.ca/contactus) before **June 10, 2020**. Next year's implementation plan will be revised to reflect public comments received, alongside latest developments.

MESSAGE FROM THE CEO

Working together in a time of uncertainty

With the evolving COVID-19 situation, it is a time of unprecedented uncertainty in the world. Protecting people and the environment has always been a priority for the NWMO, and we are committed to doing our part to help "flatten the curve."

Following the Canadian government's advice, our employees are working remotely. We have temporarily closed our offices and paused field evaluations, which will resume at a later date. Other technical work continues remotely at this time. As we adjust to working remotely and new routines, our employees continue to keep Canada's plan on track while also contributing to the health and well-being of their colleagues and communities.

We strongly believe in supporting communities in which we work. And now is an important time to do so. For example, we are providing a $25,000 donation to each municipal and Indigenous community in the siting process for them to invest in initiatives that will assist them through the pandemic. We also contributed to a food bank in Thunder Bay to support a new Vulnerable Person Emergency Food Hamper program and we have donated face masks, initially ordered for staff, to an Indigenous health care organization in Toronto. I'm proud of our staff for taking the initiative to make practical contributions and live our shared values.

We know from our own work that cooperation and collaboration are necessary for the success of any important societal objective. This brings me back to Canada's plan to safely manage used nuclear fuel in the long term. We recently narrowed our focus to two areas of study: Ignace in northern Ontario and South Bruce in southern Ontario, and we expect to identify a single, preferred location for a deep geological repository for used nuclear fuel by 2023. Reaching this point was only possible because communities in the siting process have been engaged every step of the way. We developed relationships and learned together. You can read more about our progress with Canada's plan in our recently released 2017-2019 triennial report.



Laurie Swami
President and CEO

With two areas remaining in the siting process, we are now embarking on next steps. As we begin to transition to a new phase of the project, we are preparing not only for site selection in 2023, but also for all the activities that will follow, including the regulatory processes we expect to initiate in 2024. We outline plans for the next five years in our recently updated implementation plan.

It is true, we are in midst of a challenging time. However, we will address these challenges together and continue to advance Canada's plan, as we protect people and the environment.

Stay safe.

The NWMO advances Canada's plan: Siting process continues in two areas

In November 2019, the Nuclear Waste Management Organization (NWMO) announced that we are advancing the site selection process for a deep geological repository for Canada's used nuclear fuel. We narrowed our focus from five to two potential siting areas.

The Township of Ignace in northwestern Ontario and the Municipality of South Bruce in southern Ontario will continue to be considered potential host areas for the project. The areas around the Townships of Hornepayne and Manitouwadge in northern Ontario and the Township of Huron-Kinloss in southern Ontario will no longer be considered as potential hosts for the project. However, as a neighbour to South Bruce, the community of Huron-Kinloss will continue to play a strong role as activities continue.

"These are hard decisions and not made lightly, but ultimately, we are working towards identifying one area where we can implement Canada's plan to ensure the protection of both people and the environment," said Dr. Mahrez Ben Belfadhel, Vice-President of Site Selection at the NWMO.

The site selection process has been underway since 2010. This process started with 22 municipalities and Indigenous communities that expressed interest in learning more and exploring their potential to host the project. We have gradually narrowed our focus to fewer areas through technical site evaluations and social engagement to assess safety and the potential to build supportive and resilient partnerships, key criteria to assess the suitability of each area.

See Siting process, p. 4



Farmer Darren Ireland is one of the South Bruce landowners who entered into an agreement with the NWMO to allow for further site investigations at a potential deep geological repository location.

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WHAT WE DO

The NWMO is responsible for implementing Canada's plan for the safe, long-term management of used nuclear fuel.

The plan, known as Adaptive Phased Management (APM), emerged through dialogue and was selected by the Government of Canada in 2007.

APM involves constructing a deep geological repository in which to contain and isolate the used fuel. The project will only proceed with municipalities, First Nation and Métis communities, and surrounding communities, working in partnership to implement it.

We are currently working in communities in two potential siting areas and expect to identify a preferred site by 2023.

SCIENCE INDIGENOUS KNOWLEDGE INTERNATIONAL ENGAGEMENT CORPORATE

Viewpoint

Mahrez Ben Belfadhel
Vice-President of Site Selection



BUILDING A VIEW OF THE FUTURE

Great achievements are generally the result of everyone working together. That is why the NWMO has collaborated with communities every step of the way in the siting process of a deep geological repository for used nuclear fuel.

It has been a pleasure and privilege to work with local residents over the years, who have helped advance Canada's plan and continue to do so.

Our recent decision to narrow our focus to two siting areas was not an easy one to make. However it brings us significantly closer to the critical milestone of selecting a site for the repository.

We will continue our work together with communities moving forward in the siting process. At the same time we recognize that the global pandemic is affecting us all. As our president and CEO, Laurie Swami, mentioned in her message on page 1, the NWMO is providing support to potential siting communities to assist them with their well-being during this unprecedented situation.

In the months ahead, engagement activities will increasingly focus on three considerations that are necessary for the success of this multi-generational project: the potential for mutually agreeable partnerships, a compelling demonstration of willingness, and how the project could contribute to community well-being.

Communities continuing in the process have already begun helping us define the kinds of long-term, sustainable partnerships that will be needed to implement this national infrastructure project. Our partnership road map, first shared with communities in 2017, has helped guide these initial discussions.

Building on momentum achieved to date, we will collaborate with communities (remotely for the time being as we work to flatten the curve of the pandemic), to develop area-specific visions for the project and explore how a future that includes Canada's plan might benefit their area.

In parallel with our joint exploration of partnership, the NWMO will work with potential siting areas to develop a plan for building and assessing willingness. Also, communities will further consider how implementing the project might affect their area's well-being.

This upcoming work will help us progress towards identifying informed and willing hosts and long-term partners for implementing Canada's plan for the safe, long-term care of used nuclear fuel.

The NWMO publishes 2017-19 triennial report

The NWMO has submitted *Moving towards partnership – Triennial Report 2017 to 2019* to the Honourable Seamus O'Regan, Minister of Natural Resources, and released the report publicly. This report meets a requirement of the *Nuclear Fuel Waste Act* and will be tabled in Parliament.

"Throughout this reporting period, bold steps are evident in all our work – in advancing site selection, in validating our technical solutions, and in leading by example with our Reconciliation journey," said Laurie Swami, President and CEO of the NWMO.

To advance the site selection process, we narrowed our focus to fewer study areas between 2017 and 2019: from nine to two. We remain on track to select a single, preferred site by 2023.

In parallel with our site selection process, our technical program made steady advancements, including continuing to demonstrate the safety and effectiveness of the multiple-barrier system and learning more about the rock at potential siting locations.

We have also taken important steps in our Reconciliation journey as part of our civic duty to contribute to an essential Canadian conversation. Building on our 2018 Reconciliation Statement, we issued a Reconciliation Policy in 2019 that commits to measuring our progress on an annual basis.

Also included in the triennial report are our new five-year strategic plan, *Implementing Adaptive Phased Management 2020 to 2024*, and a report from our Advisory Council. The Council is an independent and arm's-length body that provides advice and views on how we discharge our responsibilities.

The triennial report is available on our website at www.nwmo.ca/reports.

> *"Throughout this reporting period, bold steps are evident in all our work – in advancing site selection, in validating our technical solutions, and in leading by example with our Reconciliation journey."*
>
> **Laurie Swami,**
> **NWMO President and CEO**

Local partnership brings opportunities for Grades 7 and 8 students across Grey-Bruce to explore the skilled trades

Grades 7 and 8 students got a first-hand look at the new Skills Opportunities Showcase (SOS) Trailer 2.0 that officially launched on Dec. 6, 2019. The SOS Trailer 2.0 aims to give youth in schools across Bruce and Grey Counties exposure to the skilled trades, and science, technology, engineering, and mathematics (STEM) fields.

The SOS Trailer 2.0 is the first-of-its-kind in Ontario and will showcase various skilled trade opportunities, including tire changing, heavy equipment, hair styling, welding, carpentry, culinary, masonry, electrical wiring, as well as various STEM learning tools and dexterity challenges.

"The Ontario Youth Apprenticeship Program (OYAP) is always looking for new ways for youth to explore the skilled trades. The SOS Trailer 2.0 brings hands-on activities from every sector right to Grades 7 and 8 students who are trying to decide what courses to take in high school," said Dave Barrett, Coordinator/Facilitator for OYAP.

The OYAP hosts a number of events and competitions throughout the year. It also provides training so students can explore apprenticeship opportunities.

"We want to give students in Grades 7 and 8 a fun, interactive experience with the SOS Trailer 2.0 so they can pursue their STEM interest in secondary school, join a Specialist High Skills Major program, try a co-op placement, and potentially be the apprentice our local businesses are looking for in a few short years," added Mr. Barrett.

The idea for a mobile learning lab dates back to 2009 when the Four County Labour Market Planning Board (FCLMPB) launched a similar initiative.

"We're looking forward to launching an updated version of the trailer and continuing to collaborate with the school boards and other local partners to provide hands-on opportunities that enrich the educational experiences of our youth as they explore in-demand careers," said Gemma Mendez-Smith, Executive Director for the FCLMPB.

The SOS Trailer 2.0 will visit schools across the Bluewater District School Board and Bruce-Grey Catholic District School Board. The initiative is expected to reach more than 20,000 students in the area's 50 elementary schools and 11 secondary schools.

It was funded through the collaborative efforts of the Township of Huron-Kinloss and the Municipality of South Bruce that each provided $12,500. In addition, the NWMO contributed $50,000 through our Early Investments in Education and Skills (EIES) program. The EIES program supports education and skills training for residents of areas actively participating in Canada's plan as a way to contribute to community well-being and capacity. The SOS Trailer 2.0 was purchased by the FCLMPB.



Grades 7 and 8 students in Grey-Bruce got hands-on experience about what is required in the skilled trades, taking part in interactive trials like tire changing, heavy equipment operating, welding, as well as various STEM learning tools and fun dexterity challenges.

"At the NWMO, we are always looking for opportunities to promote the skilled trades and STEM education," said Becky Smith, NWMO Regional Communications Manager. "Partnership is at the core of what we do, and we are thrilled to be participating with local school boards, the OYAP, the FCLMPB, along with Huron-Kinloss and South Bruce."

Siting process

Continued from p. 2

In the Ignace area, the potential repository site is located on Crown land, and we have worked with appropriate government bodies to secure access for studies.

However, in South Bruce, the potential repository site would be located on privately owned land. As a result, the process for accessing a potential site in this area is different.

Following a Land Access Process initiated in 2019, we announced in January 2020 that the NWMO signed agreements with landowners in South Bruce that will allow sufficient access to land – nearly 1,300 acres (526 hectares) to date – for studies at a potential deep geological repository location. The NWMO will continue discussions with landowners in the vicinity of the potential site over the coming months and years to further aggregate additional land in this area to form a site of approximately 1,500 acres (607 hectares).

In both the remaining study areas, next steps will include working with municipal and Indigenous communities to conduct progressively more detailed technical site evaluations and social studies.

The municipalities and Indigenous communities exiting the site selection process, as well as their neighbouring communities, are eligible for one-time community well-being investments to acknowledge their leadership and role contributing to Canada's plan. These investments will be made in a community well-being reserve fund (or equivalent) and are a way for the NWMO to continue contributing to well-being, even as work continues in other areas.

Ignace Minor Ball celebrates a great season



For six weeks this past summer, 18 children aged four to 12 learned how to play baseball as part of Ignace Minor Ball.

This past summer, community volunteers re-established the youth minor baseball league in Ignace, and for six Thursdays, 18 children aged four to 12 learned how to play baseball.

Chelsey McNally, Ignace Minor Ball Coordinator, would like to see baseball grow in the area, providing something for the children to look forward to.

"Not only will baseball keep the children busy and active, and show them how to work well with others, but it will also provide free entertainment for the rest of the community," said Ms. McNally.

A not-for-profit group, Ignace Minor Ball is eager to schedule their second season with a goal of having baseball registration open to all ages.

The NWMO provides support that will help with the purchase of game and safety equipment, as well as baseball jerseys.

"We are thrilled to support such initiatives that bring the community together – we commend our community volunteers for organizing a successful league," said Chantelle Gascon, NWMO Community Liaison Manager.

The NWMO attends conferences to continue important engagement with municipalities

Municipalities play a key role in implementing Canada's plan for the safe, long-term management of used nuclear fuel – whether as potential informed and willing hosts for the deep geological repository or by supporting the municipalities continuing in the siting process.

One of the ways the NWMO keeps municipalities up-to-date and seeks out their perspective is through conference attendance.

This winter, the NWMO participated in the Rural Ontario Municipal Association (ROMA) Conference in Toronto, and the Kenora District Municipal Association (KDMA) Annual Meeting and Conference in Sioux Lookout.

At ROMA, Laurie Swami, NWMO President and CEO, addressed approximately 1,000 delegates from rural communities across Ontario.

Ms. Swami spoke to the conference theme of moving forward, with an update about how the NWMO is advancing the process of identifying a single, preferred site for the project. "We have been able to make so much progress because municipalities have been deeply engaged every step of the way," she said.

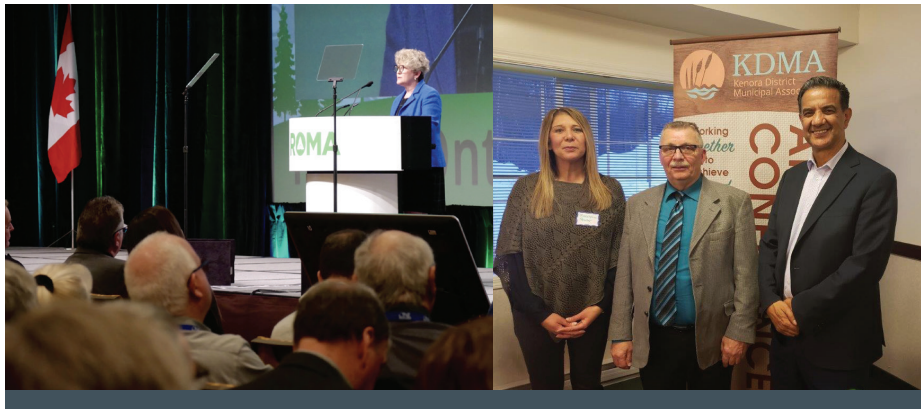
Later in the month, representatives from Kenora District municipalities and nearly 45 local government officials gathered at the KDMA conference.

Dr. Mahrez Ben Belfadhel, NWMO Vice-President of Site Selection, delivered a joint presentation with Ignace Mayor, at that time, Don Cunningham and Ignace Chief Administrative Officer Marshalina Reader on the topic of site selection and partnership. The panel discussed how the NWMO is working together with the municipality to explore the potential for partnership.

"The NWMO is committed to implementing the project in a manner that will enhance the well-being of the host communities. We understand that well-being can only be defined by the communities themselves as they are best positioned to assess their long-term interests based on the vision they have for their area," Dr. Ben Belfadhel said.

"We remain dedicated to working closely with the NWMO in developing an authentic approach to community visioning as both a process and a statement. It is hoped that engaging our residents this way will result in diversity, aligned goals, trust and belonging, and shall further serve to affirm the economic growth and development strategies our Township has achieved to date. As important, we continue to value investment to meaningful regional engagement efforts which shall guide holistic strategic planning and decision-making undertakings, thereby best positioning our entire region for future success," says Mayor Don Cunningham.

Following the presentations at both of these conferences, delegates were invited to stop by the NWMO booth or information desk, ask questions about Canada's plan, and learn more to make informed decisions.



At the Rural Ontario Municipal Association (ROMA) Conference (left), Laurie Swami, President and CEO of the NWMO, spoke to the conference theme of moving forward. At the Kenora District Municipal Association (KDMA) Annual Meeting and Conference (right), Dr. Mahrez Ben Belfadhel, Vice-President of Site Selection at the NWMO, delivered a joint presentation with Ignace Mayor Don Cunningham and Ignace Chief Administrative Officer Marshalina Reader.

Meet the team: Safety Assessment



The postclosure Safety Assessment team calculates repository performance in the long term.

Safety comes first in every aspect of the NWMO's work, so it is no surprise that the Safety Assessment team plays an essential role in our organization. The team is responsible for demonstrating the safety of any potential repository site and design.

All 11 team members have advanced degrees and years of experience in fields such as chemical, mechanical, and nuclear engineering, geochemistry, health physics, and hydrogeology. Many have been with the NWMO for a decade or more, and they are using their collective expertise to prepare technical preclosure and postclosure safety assessments.

At this stage of the site selection process, the Safety Assessment team and industry partners have conducted several generic case studies based on hypothetical sites and conceptual designs. Through these case studies, they have developed a good understanding of key features that impact the operational and long-term safety of any potential site.

"We are building our understanding of what specific locations in our siting process are like, and those pictures are improving," said Dr. Erik Kremer, Section Manager of Siting Safety Assessment at the NWMO. "We are learning, incorporating new data, and steadily increasing our confidence over time."

Using powerful computers, the team builds models and runs tests to predict how a repository will function in either crystalline or sedimentary rock. They can also test hypothetical conditions under normal or abnormal circumstances, or even under highly unrealistic failure conditions.

"It would take a standard laptop more than 80 years to run the models the team ran last year," said Chantal Medri, Senior Scientist at the NWMO.

> *"We are building our understanding of what specific locations in our siting process are like, and those pictures are improving... We are learning, incorporating new data, and steadily increasing our confidence over time."*
>
> **Dr. Erik Kremer,**
> **NWMO Section Manager**
> **of Siting Safety Assessment**

Ongoing technical research helps guide how the safety case is developed. The Safety Assessment team works closely with other teams at the NWMO to understand the site and engineering design, and also shares experience with international organizations. As part of the safety assessment process, the team will share information with municipalities and Indigenous communities engaged in the siting process to ensure their interests are considered.

After the site is selected, the team will prepare a preliminary safety assessment based on site-specific information and design in support of the impact assessment application.



The preclosure Safety Assessment team evaluates safety during facility operations.

MEET THE EXPERT Paul Gierszewski



Director of Safety and Technical Research

Dr. Paul Gierszewski oversees safety and technical research at the NWMO.

"I am responsible for determining if a particular site will be safe in the long term," Dr. Gierszewski explains. "In particular, for the evaluation of the performance of the facility for comparison with safety criteria."

"Beyond safety, I am also responsible for the core technical research at the NWMO. This is the basic and applied science that we study in Canada and with international partners in order to better understand the processes that contribute to repository and radionuclide behaviour."

Dr. Gierszewski has always worked in the nuclear industry. He received an undergraduate degree in Engineering Science from the University of Toronto and a doctoral degree in Nuclear Engineering from the Massachusetts Institute of Technology. He is a registered Professional Engineer in Ontario.

After school, Dr. Gierszewski worked in fusion research until 1999 before joining Ontario Power Generation's (OPG) nuclear waste management division, where he worked as Safety Assessment Lead for OPG's deep geologic repository project for low- and intermediate-level waste. He joined the NWMO in 2007 when it assumed responsibility for implementing Canada's plan for used nuclear fuel.

When not working, this nuclear engineer likes to visit national parks with his wife. "We set a personal goal of visiting all of them," he explains. They have been to all, but one, 50 original or planned parks in Canada – Aulavik National Park, located on Banks Island in Canada's Arctic Archipelago.

One of his travel highlights includes being the first official visitors to the new Qausuittuq National Park on Bathurst Island in Nunavut in 2016. After the pilot landed their small plane, they were greeted by a herd of caribou that were "pretty surprised." After all, no one had been there since the 1970s.

Managing uncertainty in postclosure safety assessments

People often ask us how they can be sure that Canada's plan to safely store used nuclear fuel in a deep geological repository will protect people and the environment in the very long term.

One of the important jobs for the NWMO Safety Assessment team is to assess the postclosure safety of the repository (after the repository is backfilled and sealed) and how it will perform over hundreds of thousands of years.

"If you look at the performance of the repository as designed, the used nuclear fuel remains contained and isolated essentially forever, so nothing happens. However, we also consider what happens if the repository doesn't perform as designed," said Dr. Erik Kremer, Section Manager of Siting Safety Assessment at the NWMO.

Looking so far into the future means there are elements of uncertainty about how the repository will perform and what the world will be like. "You can't know for certain, so we include that uncertainty in our assessments," said Dr. Kremer.

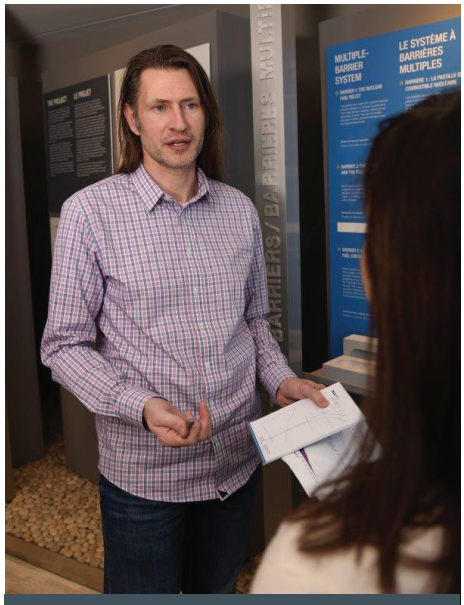
One way the Safety Assessment team accounts for uncertainty is by considering highly unlikely scenarios to be certain it understands what the consequences could be if the repository does not perform as expected. Since we do not know where people will live in the future, we assume a family lives right on top of the repository and its household and gardening water comes from a deep well. And then, we assume the family lives off its land.

"Then, if we find that this hypothetical family is safe, we can be certain that all other members of the public would be even safer," said Dr. Kremer.

Detailed case studies have found the family would be safe if the repository were sited in an appropriate sedimentary rock formation in southern Ontario or an appropriate crystalline rock formation in northern Ontario.

Now that we have narrowed our focus to two potential siting areas, the Safety Assessment team will develop site-specific case studies, using the same methodology.

Once a site is selected, a preliminary safety assessment will support the impact assessment application and play an essential role in achieving regulatory approval.



Dr. Erik Kremer, NWMO Section Manager of Siting Safety Assessment, explains that postclosure safety assessments take uncertainty into account.

Scientists and Indigenous Knowledge keepers help build bridges of understanding

For the second year, the NWMO held a workshop to bring together scientists and Indigenous Knowledge keepers.

Indigenous Elders and potential siting area community members, advisors to the NWMO, experts in traditional knowledge, NWMO leaders and staff, and professors from Canadian and international universities attended the two-day workshop in King City, Ont.

"For this workshop, we decided to focus on bridging the gap that exists among western scientists regarding Indigenous Knowledge," said Bob Watts, Vice-President of Indigenous Relations at the NWMO. "We want to put in place the foundational knowledge needed to look at ideas for collaboration around Canada's plan for used nuclear fuel."

Members of the NWMO Council of Elders and Youth opened the workshop: Elder Fred Kelly performed a Pipe Ceremony, Brandon Petahtegoose continued with a drum song to honour the pipe and guidance it would bring to the meeting, and Elder Billie Schibler added prayers to honour the waters on Mother Earth.

The sessions that followed were both immersive and participatory. Topics included understanding the Indigenous world view, Indigenous teachings about water, and the agency of Mother Earth and the stewardship role of Indigenous women.

Lyndon J. Linklater, a traditional knowledge keeper, shared Muskeg tea, an Indigenous medicine. While the group sipped on their tea in a circle, he told stories and shared various aspects of Indigenous world view, traditional values and kinship structures.



Members of the NWMO Council of Elders and Youth opened the workshop bringing together scientists and Indigenous Knowledge keepers.

Describing the Elders as "our Google," Mr. Linklater explained that Indigenous peoples seek guidance from the wisdom of Elders, and knowledge is rooted in an oral tradition. He encouraged the group to consider communicating about the project in a way that will resonate with Indigenous peoples.

"My hope is to create a dialogue between western scientists and Elders, today and in the future," Mr. Linklater said.

During a presentation about Mother Earth, Elder Diane Longboat introduced the concept of the "Soul of Science," which includes natural laws such as connection to spirit for guidance, taking only what you need from the land and water, and not wasting resources. She highlighted the NWMO's borehole drilling as an example of integrating this approach into scientific work.

"During my visit to the borehole site in the Wabigoon Lake area, I saw the care and respect that was taken with the land and also that the NWMO created a space on the land for offerings and ceremony," Elder Longboat explained.

Derek Wilson, Chief Engineer and Vice-President of Contract Management at the NWMO, confirmed the importance of interweaving Indigenous Knowledge. "We are going down a path together, and it is important to consider different world views and how aspects of the Indigenous Knowledge system can inform our project moving forward."

The workshop will have an effect even after its conclusion. Workshop participant Jamie Noel, a corrosion scientist and assistant professor at the University of Western Ontario, plans to share his learning with his students, who may eventually work on the Adaptive Phased Management project or other large infrastructure projects. "Being open to different ways of knowing and deepening our understanding will benefit everyone," he said.

#VoicesofReconciliation – The NWMO continues our Reconciliation journey

In January 2020, the NWMO published *Implementing Reconciliation*, the final video in our #VoicesofReconciliation series. It is available online at www.youtube.com/TheNWMO.

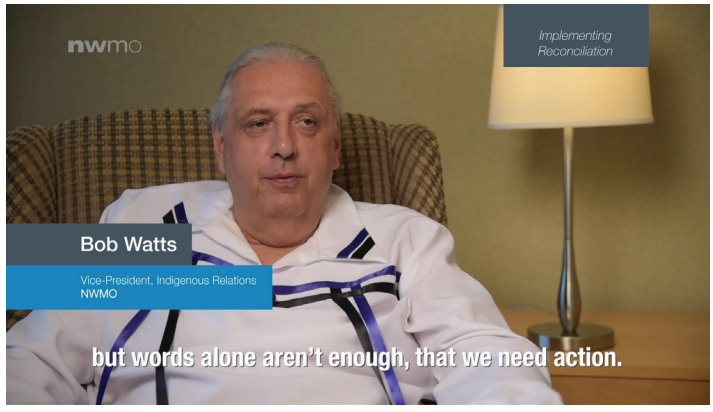
The latest video highlights our Reconciliation Policy, formalized through an Indigenous Sunrise Ceremony in October 2019, and speaks to how we plan to implement it. It includes information about the assessment tool we developed to ensure our policies are consistent with Reconciliation, how our hiring process increasingly reflects our commitment to Reconciliation, and the cultural awareness and Reconciliation training we provide to our employees.

This coming year, the NWMO will introduce additional Reconciliation training for our employees to build on the knowledge and understanding gained through previous training.

The nine-part video series, which was launched in June 2019, explores the steps we have taken in our Reconciliation journey and the work that lies ahead. The series addresses important topics of a national conversation, including why we need Reconciliation, recognizing the past, and our civic duty to get involved.

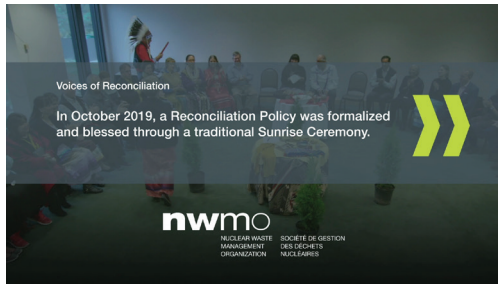
The video series is one of a number of activities that demonstrates the NWMO's ongoing commitment to build a culture of Reconciliation, and create space for tough conversations about respectful relationships, privilege, and bias, and how that relates to Reconciliation.







The NWMO's #VoicesofReconciliation video series is one example of how we are implementing Reconciliation.







Annual tour brings together the NWMO's academic research partners to exchange knowledge and foster collaboration

> *I wanted to do research that was meaningful for the world, and there's not much that is more meaningful than this… Nuclear waste needs to be addressed, and I am quite proud that I am helping to address it safely.*

Lindsay Grandy,
Western University
doctoral student



A researcher examines a Used Fuel Transportation Package bolt.

The NWMO works with a group of highly skilled academics in diverse fields who conduct research that contributes to Canada's plan. Each year, we host an annual tour at our proof test facility in Oakville to bring together our research partners to share ideas and foster collaboration. They also have the opportunity to see innovation in action as they get a first-hand view of how Canada's plan is advancing.

"The researchers each focus on one specific aspect of the project. This day is about facilitating conversations and collaboration between our researchers, as well as providing a larger context," said Dr. Jeff Binns, Corrosion Scientist at the NWMO and tour organizer.

This year, 60 academics from seven Canadian universities gathered at the proof test facility on a brisk February day.

In the morning, the NWMO technical staff provided updates on our used fuel container, bentonite manufacturing, upcoming mock emplacement trials, our technical transportation program, and our research and development program.

"Two years ago, I was able to see where my project fits in and why it's relevant [to Canada's plan]. Coming back a second time has allowed me to see how the project is evolving," said Lindsay Grandy, a doctoral student in Physical Chemistry at Western University. Ms. Grandy is studying how the presence of radiation influences chemistry and copper behaviour in the deep geological repository.

New this year, the tour incorporated an update from the Indigenous Relations team at the NWMO. Jessica Perritt, NWMO Section Manager of Indigenous Knowledge and Reconciliation, spoke about the NWMO's Reconciliation journey, how we interweave Indigenous Knowledge into our work, and the importance of developing relationships so projects can be successfully implemented.

"I like that the NWMO is taking the Indigenous perspective so seriously and also that it is passing it along to those of us who are not directly involved [in the NWMO]. As I was listening to some of the training that is being provided, I thought it would be great to access some of those opportunities," said Dr. Greg Slater, an organic and isotope geochemist from McMaster University.

In the afternoon, Dr. Slater, who is conducting microbial research in an environment related to a deep geological repository, provided an update to the group. So too did other professors and post-doctoral students from universities such as Guelph, McMaster, Toronto, Waterloo, and Western.

Following the presentations, students displayed poster boards of their research, which facilitated additional conversation. Ms. Grandy reflected on conducting research for Canada's plan. "I wanted to do research that was meaningful for the world, and there's not much that is more meaningful than this… Nuclear waste needs to be addressed, and I am quite proud that I am helping to address it safely."

View a video about the academic tour at www.youtube.com/TheNWMO.

Renowned Earth scientist and NWMO collaborator wins Canada's top science and engineering award

In 2019, the Natural Sciences and Engineering Research Council of Canada (NSERC) awarded world-renowned earth sciences professor Barbara Sherwood Lollar the 2019 Gerhard Herzberg Canada Gold Medal for Science and Engineering for her work on ancient water below the Earth's surface. Dr. Sherwood Lollar has also collaborated with the NWMO, completing research through a partnership agreement with the University of Toronto.

Her research, which revealed subsurface microbial life and the reactions between water and rock that sustain life deep underground, could also help astrobiologists understand where life might be found on other planets, such as Mars.

"This is the highest award that the NSERC can give, and we are thrilled that Barbara Sherwood Lollar received it. We have been privileged to work with this renowned scientist at the NWMO and benefited from her research. She is a wonderful role model for young people who aspire to a STEM career," said Laurie Swami, President and CEO of the NWMO.

In 2014, Dr. Sherwood Lollar documented for the NWMO a method for sampling ground and pore water in crystalline rock for microbial and geochemical analysis. In 2018, she conducted a case study for the NWMO at a crystalline rock site – the Kidd Creek Mine in Timmins, Ont. Dr. Sherwood Lollar analyzed the water in the rock fractures to determine the amount and type of micro-organisms present, and the effect that drilling and subsurface infrastructure development would have on them.

> *Her extraordinary work in this field allows us to have high confidence in our scientific work.*
>
> **Dr. Mehran Behazin, NWMO Corrosion/Microbiology Scientist**

Dr. Sherwood Lollar's research contributes to the long-term safety of the deep geological repository by further improving our knowledge on fundamental processes occurring in deep subsurface.

"Barbara is extremely focused, thorough and knowledgeable, and she always delivers top-notch reports," said Dr. Mehran Behazin, Corrosion/Microbiology Scientist at the NWMO, who works with Dr. Sherwood Lollar. "Her extraordinary work in this field allows us to have high confidence in our scientific work."

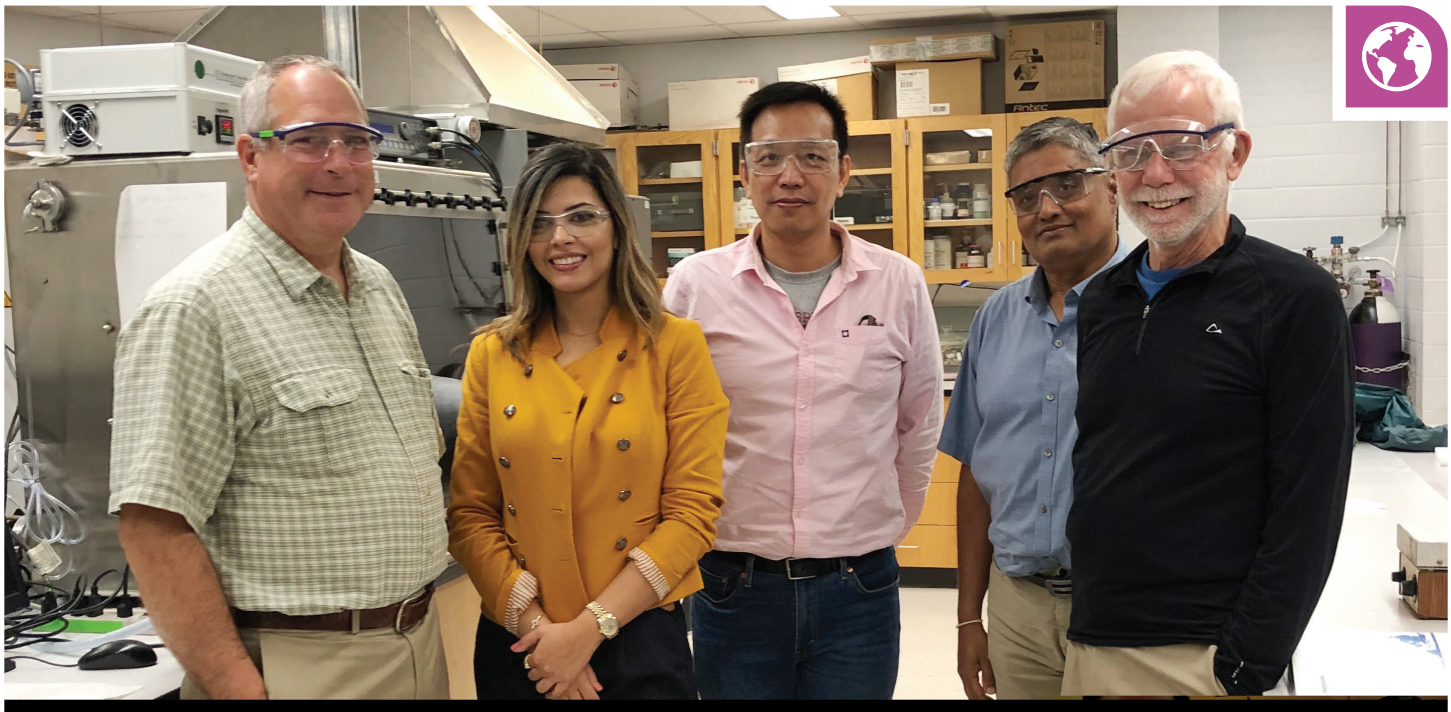
Through academic partnerships with 18 universities, the NWMO continues to work with top scientists in Canada and internationally to ensure our selected site and the multiple-barrier system will protect people and the environment, now and in the future.

> *This is the highest award that the NSERC can give, and we are thrilled that Barbara Sherwood Lollar received it... She is a wonderful role model for young people who aspire to a STEM career.*
>
> **Laurie Swami, NWMO President and CEO**



Dr. Barbara Sherwood Lollar received the 2019 Gerhard Herzberg Canada Gold Medal for Science and Engineering.

The NWMO signs new co-operation agreement with Taiwanese counterpart



From left, Dr. Jamie Noel, Dr. Mehran Behazin, Dr. Tung Yuan (Romeo) Yung, Dr. Sridhar Ramamurthy, and Dr. David Shoesmith visited a corrosion/electrochemistry lab at Western University.

This past October, Canada's NWMO signed a new memorandum of understanding with our Taiwanese counterpart – the Institute of Nuclear Energy Research (INER).

INER aims to identify opportunities for its team members to work as visiting scientists at some of our partner research facilities. "The hope is to help INER develop their experimental capabilities and share future data," said Dr. Mehran Behazin, Corrosion/Microbiology Scientist at the NWMO.

The NWMO's partnerships with universities play an important role in our technical research to deepen our understanding of the engineered and natural barriers that will work together to contain and isolate used nuclear fuel, protecting people and the environment.

During his visit to the NWMO, Dr. Tung Yuan (Romeo) Yung, a representative from INER, also visited Western University, where he toured laboratories and learned about research being conducted to support Canada's plan for the safe, long-term management of used nuclear fuel.

The agreement with INER demonstrates the NWMO's commitment to co-operating with other organizations, and sharing technology, experiences, and best practices.

> *"The hope is to help INER develop their experimental capabilities and share future data."*
>
> **Dr. Mehran Behazin, NWMO Corrosion/Microbiology Scientist**

This agreement joins eight accords already in place with nuclear waste organizations in Finland, Japan, Belgium, France, Sweden, Switzerland, South Korea, and the United Kingdom.

nwmo
NUCLEAR WASTE MANAGEMENT ORGANIZATION
SOCIÉTÉ DE GESTION DES DÉCHETS NUCLÉAIRES

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