The NWMO engages with first responders about transportation

East Ferris Councilor and veteran volunteer firefighter Terry Kelly appreciates the Nuclear Waste Management Organization (NWMO) for engaging first responders early in our transportation planning process.

As part of Canada’s plan, the NWMO will need to move used nuclear fuel from the interim storage facilities at nuclear reactor sites to the deep geological repository.

“Many people do not have knowledge of the nuclear industry and initially there is a fear factor. So I think learning as much as possible about the transportation of used nuclear fuel and education for first responders is of paramount importance,” said Mr. Kelly.

In particular, first responders have indicated they want to learn about how used nuclear fuel will be transported safely, what security measures will be taken, and what resources are available to them in case they are needed. It’s exactly the sort of information they receive at transportation engagement sessions.

The Nuclear Waste Management Organization (NWMO) engages with first responders about transportation.
The past few months have seen the entire country adapt to a new reality. The Nuclear Waste Management Organization has had to adapt as well. Working with Canadians and respecting their needs and priorities is foundational to our work. It makes me so proud to see the work we have accomplished in the siting communities under such unusual circumstances. Together, we have continued to work towards Canada’s Plan. Often, that work has been virtual. More recently, we have been able to come together again, safely, and following all public health protocols.

Whether online or face-to-face, the past few months have shown that our work is stronger when we work together. In fact, all of us have gotten to know each other so well using virtual tools. We’ve met each other’s children and pets. They’ve been in my home, just like I’ve been in theirs.

We have also learned from each other what it means to progress a major infrastructure project during a pandemic. There’s lots to show for these efforts. Our mobile exhibit — a rolling exhibit designed to travel the country to share Canada’s plan — returned to Ignace and South Bruce this fall.

We also completed work towards three major components of the plan: transportation, safety and partnership.

We launched a new draft transportation planning framework to engage Canadians in the design of our plan to move used nuclear fuel. This planning document is a key step in our work to engage communities in the implementation of Canada’s plan. It will inform and guide our work as we prepare to start safely moving, sometime in the 2040s, used nuclear fuel to a central site for its safe, long-term storage in a deep geological repository.

At the same time, we continued our design and engineering work, signing an agreement to advance the production of containers for used nuclear fuel. Our environmental work progressed as well, through workshops to engage local communities and incorporate their input into our monitoring and planning.

We also engaged in project visioning workshops with local communities — an important step toward defining what partnership would look like in our potential siting areas. We are working hard with municipal leaders, Indigenous communities and local interest groups to define willingness and move towards selecting a site for Canada’s plan in 2023.

I’m so pleased with these accomplishments and how we have adapted to this new reality as we continue to work in the new normal.

Safety drives everything we do at the NWMO. This has been the case ever since we were created to implement Canada’s plan for the safe, long-term management of used nuclear fuel. But in recent months it has taken on a new meaning.

In the months ahead, I am so looking forward to getting back on the ground in the communities we work with – in a safe and physically distant manner, of course.
NWMO Annual Geoscience Seminar draws record number of experts from around the world

Each year, the NWMO hosts a geoscience seminar to bring together geoscientists from across Canada and internationally. These scientists are conducting research that has applications for both sedimentary and crystalline rock. Both types of rock could potentially host the deep geological repository for used nuclear fuel. This will enable the NWMO to make good decisions for the long-term while still remaining flexible in adapting to advancements in technology or infrastructure.

Our engagement is wide-ranging. My colleagues and I have had conversations with municipal and Indigenous communities in potential siting areas, different levels of government, regulatory agencies, technical experts, and with interested Canadians and Indigenous peoples. I continue to learn about the importance of Indigenous voices being a vital part of transportation planning. I understand that I need to apply a Reconciliation lens to all of my work. Given our country’s history of past and continuing wrongs, it is imperative that we build positive and respectful relationships based on trust, rights and equity. This will help us to fully understand how planning can be implemented in a way that takes into account Indigenous priorities and how those priorities are reflected in all of our work.

As we progress, the NWMO will continue to share information about transportation planning and make decisions based on feedback we are receiving. I am looking forward to further dialogue on this important aspect of Canada’s plan.

“Experts from all fields of geoscience, many of whom are involved directly in the NWMO research program, come together to discuss advances in their respective disciplines at this event every year,” said Laura Kennell, a Senior Scientist in Safety and Technical Research at the NWMO. “The seminar highlights the various research programs that the NWMO undertakes and supports to ensure we are applying best practice and current scientific knowledge to all of our work activities.”

A select number of participants presented highlights from their research or introduced new projects. The new projects discussed this year focused on how climate change affects the rock. This research explores how glaciation cycles affect erosion rates and how frozen ground, also known as permafrost, can affect groundwater flow.

Dr. John Gosse, Killam Professor with the Department of Earth and Environmental Sciences at Dalhousie University, gave a presentation on the erosion of crystalline rocks by glaciers. He said of the seminar: “The display of profound synergies among geophysical, geochemical, and materials sciences; the scientific innovations that the NWMO facilitates; and the NWMO’s participation in key international science consortia to ensure leading-edge knowledge made me proud to be a Canadian.”

Even with the online format, participants expressed interest in following up on research underway at other universities or institutions, and assessing applicability to their own projects.
The NWMO continues progress with landowners in South Bruce

In October, the NWMO confirmed it had signed more agreements with landowners in South Bruce. We shared a map showing the potential deep geological repository site in South Bruce, outlined next steps to confirm safety at the site, and made a commitment to protect property values in the area if it is selected to host a repository.

Earlier in 2020, we had announced that we had signed agreements with landowners in the area for 1,300 acres. Since then, the NWMO secured just over 1,500 acres north of Teeswater, Ontario. The agreements include a combination of option and purchase arrangements that allow the NWMO to conduct studies while allowing landowners to continue using the land.

“This is an important milestone in South Bruce, and an expression of confidence in the project. We are thankful for the continued interest in our land access process, and know there is much more to do as we work toward assessing the potential suitability of the site,” said Dr. Mahrez Ben Belfadhel, Vice-President of Site Selection at the NWMO.

The milestone will enable important site assessment work to continue as the NWMO moves to identify a single, preferred location for a deep geological repository.

Technical site evaluations, such as borehole drilling and environmental baseline monitoring, are key next steps for the site. At the same time, the NWMO will continue to seek input and address questions from residents through open houses, exhibits, meetings and other engagement activities.

The NWMO has secured just over 1,560 acres of land north of Teeswater, Ontario.

The NWMO engages with first responders

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Last November in Gravenhurst, Mr. Kelly attended one of these sessions along with fire chiefs and other volunteer firefighters from East Ferris and Markstay Warren. First responders have a lot to contribute to transportation planning over the long-term, so beginning these conversations now is important.

“I was very impressed with the video of extreme tests that demonstrated the safety of used fuel transportation packages,” said Mr. Kelly. “One test showed a train running into a transportation package. The package remained intact. This video helped to give me confidence in the safety of the package.”

Mr. Kelly also recognizes the NWMO for our inclusive engagement of communities and other interested individuals and organizations.

“The more transparent the process is, the more we can be certain there won’t be any surprises in the long run. The fact that NWMO is going to incredible lengths to engage people now and planning ahead says a lot about the viability of the project,” said Mr. Kelly.

The NWMO will be holding another transportation session for first responders in November.
The NWMO and communities co-design environmental baseline monitoring programs

The NWMO has been co-designing an environmental baseline monitoring program with the two potential siting area communities: Ignace and South Bruce.

The environmental baseline monitoring program will support impact assessment by helping the NWMO better understand the current landscape. An impact assessment is a process that predicts the potential environmental effects of a proposed project before it is carried out.

“We need to know what the current reality of the environment is before we can understand how the project could impact it,” explained Joanne Jacyk, Section Manager, Environmental Assessment at the NWMO.

In the Ignace area, the NWMO conducted workshops in 2019 and 2020, and shared a draft environmental program design during that process. At each stage of the process, we confirmed with the community that their input was reflected in the draft design. The environmental monitoring program for the Ignace area has now been finalized and is posted on our website at nwmo.ca/IgnaceEBM.

In South Bruce, the NWMO held online and small in-person workshops this past summer and fall with residents. During the workshops, South Bruce residents identified surface water, groundwater, forest health, and fish spawning as key areas of importance. Residents also expressed interest in soil quality and endangered species.

After completing the South Bruce workshops, we will incorporate this local input to help develop a draft environmental program design. Then we will share that draft program with the community and ask for further feedback.

Sample collection in each area begins after the environmental baseline monitoring program is finalized and interested community members can get involved in this process.

As the program has been finalized in Ignace, we have started to implement the program there. Following the request from the community to be involved in sampling, the NWMO is reaching out to community members to have them submit part of their harvest for tissue sample collection to help us understand the health of the local ecology and stressors on the food chain.

In South Bruce, the NWMO will provide training to interested community members when we begin sample collection, likely in 2021. Once sampling begins, we will share the data with the community and review the program annually.

The NWMO accounts for climate change in repository design

To mitigate and minimize the impact of climate change on a future deep geological repository for used nuclear fuel, the NWMO worked with Golder Associates Ltd. to study possible scenarios in the Ignace, Ontario study area. Similar research is underway in South Bruce, Ontario – the other potential location for a repository.

The study found precipitation is likely to increase in the future, and provided recommendations to ensure that any repository built in the Ignace area would be built with increased precipitation in mind.

“This is the first time this modelling work has been done for a potential repository location and any assessment of sites for the safe storage of used nuclear fuels must take into account the potential future impact of climate change on its infrastructure,” said Kelly Liberda, Senior Engineer, Preclosure Safety. “While it’s difficult to project the extent to which precipitation could fluctuate in specific geographic areas, the NWMO is taking steps to anticipate the most likely scenarios.”

Increased precipitation can impact the watershed in a given area, resulting in flooding or other extreme climate events. Previous industry studies have looked at the potential impact of present-day precipitation levels on repository operations, but the Golder Associates study was undertaken to consider long-term impacts based on future precipitation levels due to climate change.

“The time horizon for the storage of used nuclear fuel is very long, which means we must take into account how the evolution of climate change could impact our operational environment over that period,” said Ms. Liberda.

Based on a multi-model assessment of publicly available data, the Golder Associates study found that both one-day probable maximum precipitation and one-day rainfall events in the Ignace study area are projected to increase in the 2050s and 2080s. Indicating the future “is likely to be wetter,” the study offered recommendations for how their findings could be best leveraged in future planning.
The NWMO recognizes the anniversary of adopting UNDRIP and Orange Shirt Day

In September, the Nuclear Waste Management Organization (NWMO) continued its commitment to learn together to pursue Reconciliation. The organization joined all Canadians in recognizing two important days: the anniversary of the adoption of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and Orange Shirt Day.

NWMO employees honoured Orange Shirt Day by contributing to the ongoing dialogue about Canadian and Indigenous peoples shared history.

UNDRIPI
The United Nations adopted UNDRIP in 2007 to affirm the pre-existing individual and collective rights of Indigenous peoples around the world. UNDRIP also enshrines rights that “constitute the minimum standards for the survival, dignity and well-being of the indigenous peoples of the world.” Additionally, Canada’s Truth and Reconciliation Commission said that UNDRIP charts a path “for Reconciliation to flourish in 21st century Canada.”

“A first step was for the NWMO to recognize the importance of UNDRIP in our Reconciliation Policy (2019),” said Brittany Misurec, Legal Counsel. “We are sorting through the significant UNDRIP concepts and balancing how it impacts our project as part of corporate Canada.”

“When we ask communities to learn about our project, it is equally important that we learn about what is important for the communities; the application of UNDRIP is important to communities and we are just embarking on these conversations,” said Greg Plain, Senior Advisor, Indigenous Engagement. “This is an opportunity to reflect on how this international declaration shapes the project, how we make decisions as an organization, and what that means to municipal and Indigenous communities that we are working with.”

Orange Shirt Day
On September 30, NWMO employees took part in Orange Shirt Day to contribute to the ongoing dialogue about Canada’s Indian residential school system while honouring those Indigenous children who were forcibly taken from their families and sent to residential schools. Tragically, around 6,000 Indigenous children died while at residential schools and today there are 80,000 survivors.

“While the intergenerational impacts of residential schools is still experienced by far too many, the resilience of the survivors inspires me to keep working on my own Reconciliation journey,” said Jessica Perritt, Section Manager, Indigenous Knowledge and Reconciliation. “I feel privileged to be able to learn from survivors and also see witness to the power of healing within my own family. Acknowledging their strength and resiliency is a step towards building positive and respectful relationships.”

Honouring the significance of these dates may be a first step in someone’s Reconciliation journey, and every journey starts with a first step.

Reconciliation in action: As part of the Legacy Schools program, students at Riverdale Collegiate Institute write out the names of Indigenous children who died in residential schools.
Why a Traditional Knowledge keeper and Storyteller works with the NWMO

For Lyndon J. Linklater, storytelling brings communities together. The Traditional Knowledge Keeper and Storyteller has been working with the NWMO for five years. He leads cultural awareness training for NWMO staff, contractors and communities in our potential siting areas.

Mr. Linklater provides cultural awareness training for a living because it is important: People aren’t always aware that Canada’s history includes the suppression of Indigenous culture, broken treaties and Residential Schools. Furthermore, Indigenous peoples continue to experience injustices today. Through awareness and education, we can start on the path to co-create a better future built on rights, equity and well-being. He finds shared moments of understanding and learning to be rewarding:

“I enjoy seeing the ‘aha’ moment that people have when they start to understand Indigenous history and the issues we still face.”

A citizen of Thunderchild First Nation (Plains Cree) in Saskatchewan, Mr. Linklater learned Traditional Knowledge from Elders who taught him through oral tradition, which is part of Indigenous culture. He incorporates those teachings, personal stories and interactive activities to engage people and create a learning environment.

NWMO staff bring knowledge gained from cultural awareness training and additional Reconciliation training to their jobs. It helps them build respectful relationships with Indigenous communities and to ensure they are supporting the NWMO in upholding its commitments to Reconciliation. Staff continue to find ways to interweave Indigenous Knowledge in our work – from walking the land to help determine appropriate borehole locations to incorporating sharing circles into the Human Resources department’s resilience support programs.

Municipalities in potential siting areas have also expressed interest in cultural awareness training to learn more about their Indigenous neighbours and encourage dialogue between communities, as discussions of potential partnerships continue. Mr. Linklater has facilitated cultural awareness training in these communities as well, which had a positive effect in strengthening relationships between municipal and Indigenous neighbours.

“You have these groups of people living as neighbours for years but who don’t know much about each other,” Mr. Linklater said. “The NWMO has been creating opportunities for learning through this cultural awareness training. You can see residents gain a level of understanding they never had before. To me that is a huge step in Reconciliation.”

Mr. Linklater said the NWMO is setting an example for other organizations in terms of our Reconciliation journey.

“The NWMO is answering the call to action and stepping up. They aren’t just talking about Reconciliation, they are doing something about it. I am lucky to be part of the NWMO family and to do whatever I can to help out,” he said.

The NWMO acts on commitment to Reconciliation through sponsorship

The Nuclear Waste Management Organization (NWMO) is continuing our commitment to Reconciliation through the sponsorship of organizations dedicated to Reconciliation and education.

On Orange Shirt Day in September, we renewed our sponsorship agreement with the Gord Downie & Chanie Wenjack Fund (DWF). This new five-year agreement with DWF will invest $150,000 into supporting both the Legacy Schools program and Legacy Spaces program.

“DWF is an amazing organization that is building on the legacy of two incredible people (Gord Downie and Chanie Wenjack) to encourage people to learn about Reconciliation and take action,” said Lisa Frizzell, Vice President of Stakeholder Relations at the NWMO.

The Legacy Schools program provides free toolkits to teachers in schools across Canada, including educators in areas where the NWMO is active: South Bruce and Ignace. Among its resources, the Legacy Schools toolkit features a graphic novel called Secret Path, which tells the story of Chanie Wenjack, a 12-year-old boy who died in 1966 after escaping a residential school and trying to walk 600 kilometres home.

The Legacy Spaces program offers the opportunity for organizations to create safe, welcoming places dedicated to education and spreading awareness about Indigenous history and Reconciliation. Currently, the NWMO is planning its own Legacy Space at its office in Toronto.

“This five-year commitment will support exponential growth in the Legacy Schools program to more schools and communities,” said Sarah Midanik, President & CEO of DWF. “The NWMO has already demonstrated commitment to moving Reconciliation forward, and we’re excited to partner with them to create a Legacy Space to continue this important work.”

The NWMO also continues to sponsor the Right to Play Promoting Life Skills in Aboriginal Youth (PLAY) program in Ontario, including in areas where the NWMO is active. Right to Play delivers play-based programs to promote healthy living and life skills in Indigenous communities.

“Right to Play’s program, in collaboration with numerous First Nation communities, is both culturally and spiritually applicable to Indigenous youth in reaching their aspirational goals,” said James Wagar, Senior Engagement Advisor, Indigenous, at the NWMO.

Additionally, this year for the first time, we are sponsoring Indigenous student awards at Ontario Tech University in Oshawa. Five $1,000 awards will be presented to Indigenous students from the 2020-21 school year through to the 2023-24 school year.
The NWMO signs an agreement to advance the production of containers for used nuclear fuel

Since 2012, the Nuclear Waste Management Organization (NWMO) and the National Research Council of Canada (NRC) have been working together to develop and adapt an advanced manufacturing solution for the application of copper coating to the external surface of steel containers for used nuclear fuel. The copper coating protects the containers from corrosion as part of the multiple-barrier system that will be used to contain and isolate used nuclear fuel over the long-term.

Now that the technology is ready to be scaled up, the NWMO has signed an agreement with the NRC and industry partner Polycontrols to initiate work to demonstrate the serial production of cold spray coatings on up to 20 containers as part of the NWMO’s proof-test program.

“We are excited to undertake this next step in serial production and complete the copper coating process with the NRC and Polycontrols. Serial production work is part of the NWMO’s proof-test program that will validate the safety and effectiveness of the engineered barrier system components,” said Dave Doyle, Manager of Used Fuel Container Design at the NWMO.

Activities in this stage will be carried out by the NRC and Polycontrols in the new Poly-CSAM collaborative hub specifically created for cold spray additive manufacturing (CSAM). Located at the NRC’s Boucherville site in Quebec, Poly-CSAM is a partnership between the NRC and Polycontrols.

“The Poly-CSAM facility is the ideal setup for the industrial scale-up of the NWMO’s copper coating process. It can accommodate parts up to eight meters long, and in addition to the cold spray process itself, it offers in-situ robotic machining and surface modification capabilities. We are delighted to join the NWMO and the NRC in this very important project for Canada,” said Luc Pouliot, Chief Operating Officer and Chief Technology Officer at Polycontrols.

The cold spray process is estimated to begin in the first quarter of 2021.

“Entering into this new stage of the project is a great achievement and Polycontrols is part of this success because without the creation of the Poly-CSAM facility, this would not have been possible. It is also a great achievement for the NRC as we begin the technology transfer which is our main mandate,” underlines Éric Baril, Director General for the NRC’s Automotive and Surface Transportation Research Centre.

The serial production of used fuel containers will help to move forward Canada’s plan for the safe, long-term management of used nuclear fuel.

“We are excited to undertake this next step in serial production and complete the copper coating process with the NRC and Polycontrols.

Dave Doyle,
NWMO Manager, Used Fuel Container Design