

2nd Annual Orphaned and Abandoned Mines Workshop

What We Heard: Public Event

On October 24 and 25, 2024, the Canadian Minerals and Metals Plan (CMMP) Secretariat and the Task Team on Environment under the Mines Intergovernmental Working Group (Mines IGWG) co-hosted the **2nd Annual Orphaned and Abandoned Mines (OAM) Workshop**, a public, open-door, multi-stakeholder, virtual event.

The annual workshops replace and build on over two decades of collaboration through the National Orphaned / Abandoned Mines Initiative (NOAMI), which was dissolved in 2022 after determining that it had successfully met its original objectives. The workshops seek to facilitate information sharing, diverse and inclusive engagement, and broad collaboration on exemplary practices, lessons learned, and emerging and persistent challenges related to OAM by bringing together federal, provincial, and territorial (FPT) governments, practitioners, industry, Indigenous Peoples, non-government organizations, and academics.

The theme of the 2nd Annual OAM Workshop was **Foundations for Success: Building Capacity and Developing Exemplary Practices**. It explored topics relevant to successful remediation of OAM, including exemplary practices for remediation planning and implementation; creating strong, effective, and inclusive partnerships between various stakeholders; addressing capacity constraints, developing supportive relationships, and providing opportunities for Indigenous partners; and potential economic opportunities and partnerships, including creating value from mine tailings, as well as the examination of associated considerations, risks, and challenges.

FPT governments, industry, Indigenous organizations, non-government organizations, academics, and other stakeholders demonstrated continued interest in this year's workshop, with **319 participants in attendance** over the two days. Participants were fully engaged, asked thoughtful questions, and offered insightful and relevant comments throughout the Workshop.

Day 1 began with an overview of Canadian OAM remediation, followed by five presentations showcasing exemplary practices and successful remediation initiatives that illustrated diverse and inclusive engagement and collaboration and addressed environmental and technical challenges. Following this, a panel discussion explored the potential and challenge of creating value from mine tailings. The day concluded with a series of four presentations on the economic potential of OAM remediation.

Day 2 began with a panel discussion on approaches in clean-up, restoration, and remediation science and practices, followed by a panel discussion on building capacity, trust, and supportive partnerships with Indigenous Peoples. Breakout discussions that focused on the challenges and possible solutions to improve the effectiveness of partnerships between specific groups of stakeholders closed the day and the Workshop.

This report captures key takeaways and areas for future collaboration on OAM-related issues identified during the event.

Please note: The summaries presented in this report represent the variety of perspectives and expertise heard during the 2nd Annual OAM Workshop, including expert meetings with Indigenous Peoples, industry and civil society. The input presented in this report has not been adjusted outside of the requirement to categorize the range of ideas discussed under the strategic directions. Statements made in this document are not consensus-based and should not be viewed as such. The ideas and views compiled in this document are from the Workshop discussions and do not necessarily represent the views of the Intergovernmental Working Group on the Mineral Industry or its individual members.

Key Takeaways

- Identifying strategies for addressing OAM sites and their associated environmental, health, safety, and financial issues that pose risks for communities, the mining industry, and FPT governments is critical.
- Ongoing efforts to remediate OAM and prevent future occurrences demonstrate environmental leadership and reinforce Canada's international standing as a responsible, inclusive, competitive, and sustainable mining leader.
- OAM remediation and the prevention of new OAM sites is a common issue across the country. Knowledge-sharing, development of complex, site-specific solutions, innovative collaboration, and strong partnerships built on trust can help tackle common issues and advance OAM remediation, and FPT governments play central roles in policy and programs, facilitation, and communications.
- Countless examples of exemplary remediation practices across the country already exist, highlighting the progress thus far. But there is still a lot of work to do that requires a concerted effort from all stakeholders to advance remediation sufficiently.
- Ongoing and clear communication between parties is invaluable to the respectful, mature, and transparent relationship building required to advancing OAM remediation and addressing its associated challenges.
- Gathering, managing, and sharing data helps to increase transparency and gives all parties the same knowledge base, which also help strengthen working relationships between different actors (e.g., governments, industry, academic researchers and consultants, and Indigenous Peoples).
- Indigenous communities may have very different ideas than governments and industry of what remediation is and looks like. Collaboration and partnerships can help better define what "success" looks like. A tailored approach for each site that integrates local knowledge can help address OAM challenges more effectively and contribute to momentum for community-driven outcomes.
- Developing deep relationships and trust requires meaningful engagement and a consistent investment of time.
- It is necessary to ensure that meaningful consideration and planning on all aspects of reclamation are included in closure plans and are in place for mines before work begins. These plans require robust community engagement and review, which contributes to increased transparency and stronger working relationships.
- Further work is needed to deepen understanding of the viability of creating value from mine tailings and explore additional economic opportunities in OAM remediation. This includes identifying and addressing challenges and key considerations, including technical, geological, innovative, regulatory, and the distribution of liabilities.
- To incentivize greater involvement and partnership with industry in the remediation of OAM, greater attention is required to how risks are shared and distributed to reduce liabilities for industry.
- More skilled workers are required to advance the remediation of OAM sites. Events and forums may help inspire younger generations to take up such work.

Day 1 – October 24

Presentation: Taking Stock of Canadian OAM Remediation

Charles Dumaresq, VP Science and Environmental Management at the Mining Association of Canada, provided an overview of Canada's progress in remediating OAM sites and key ongoing challenges and opportunities to further advance remediation and prevent new OAM sites.

Key Points:

- Multi-stakeholder collaboration on OAM began in 2002 with the launch of the National Orphaned and Abandoned Mines Initiative (NOAMI) at the request of Canada's Mines Ministers in response to increasing concerns about OAM.
- NOAMI organized workshops, undertook studies on various issues, fostered dialogue and knowledge sharing and developed partnerships with the aim of identifying and reducing barriers, facilitating collaboration, and catalyzing remediation.
- In doing so, NOAMI helped to raise the political profile of problems regarding OAM.
- This, along with increased public pressure on decision-makers, led Auditors General in many jurisdictions to examine financial liabilities associated with OAM and the steps being taken to reduce them and led to many jurisdictions to commit significant funds to OAM remediation.
- Much progress has been made to date to remediate OAM and to prevent new OAM from occurring, including:
 - Remediation of many OAM sites;
 - Examples of innovative collaboration with industry and Indigenous Peoples, such as Manitou/Goldex in Quebec and Faro Mine in Yukon;
 - Improvements to mine closure and reduce risk and liability to communities and jurisdictions;
 - All mining jurisdictions in Canada have mine closure legislation that continues to evolve;
 - Examples of reclaimed closed mines by mining companies.
- Key challenges to OAM remediation remain, related to the remote locations of sites, significant costs and lack of financial resources, long timelines, logistical challenges, a shortage of skilled labour, and the need to adapt to emerging issues, technologies, and practices.
- Further work is also needed to continue improving mine closure legislation, including mechanisms for financial security.
- Addressing mine closure and its challenges and barriers helps prevent mines from becoming abandoned as a result of bankruptcies of mining companies. Each mine site is unique so there are no 'one-size-fits-all' approaches; barriers to mine closure and the remediation of OAM both require a tailored approach.
- Industry practices continue to improve, including a focus on post-closure land use developed with communities, implementation of practices to help reduce the economic and social impacts on communities when mines close, and the adoption of technologies/techniques for closure, particularly to avoid or eliminate risks.
- Strong leadership and good governance are needed for both closure and remediation to ensure that objectives are not compromised by short-term financial and operational decisions.

Presentation Series: A Showcase of Exemplary Remediation Practices

Presenters illustrated Canada's progress on remediation of OAM sites by providing examples of successful initiatives that involved diverse and inclusive engagement, broad collaboration, managing environmental and technical risks, and increasing economic potential.

Overview of the Federal Contaminated Sites Action Plan

Ernest Wong, Contaminated Sites Officer in the Environmental Protection Branch at Environment and Climate Change Canada, presented an overview of the Federal Contaminated Sites Action Plan and its connection to Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)'s Northern Contaminated Sites Program.

Key Points:

- There are tens of thousands of contaminated sites in Canada. As of October 2024, the [Federal Contaminated Sites Inventory \(FCSI\)](#) has 24,229 sites, including:
 - 4454 sites that are actively assessed and/or remediated;
 - 1366 sites where contamination is suspected, but an assessment has not begun;
 - 18409 sites that are closed
- The Federal Contaminated Sites Action Plan (FCSAP) was established in 2005 to reduce health and environment risks and financial liability associated with contaminated sites and offers an example of how government funding programs can support OAM remediation.
- The program, led by Environment and Climate Change Canada, provides funding to federal departments, agencies and consolidated Crown corporations or custodians for assessment, remediation / risk management, program management, skills development, and job training.
- Phase IV of the program is set to end in 2025, leaving an estimated \$2.7B of liability for FCSAP sites.
- To receive funding under the program, sites must be under Federal responsibility, must have contamination that occurred before 1998, and must be on a First Nations reserve, or on an Indigenous community in the North.
 - Sites are prioritized as high, medium, or low, for remediation (Class 1-3). Phase IV also includes bundling of lower and higher priority sites that has allowed more sites to be remediated.
- FCSAP achievements include:
 - \$5.7B investment to date
 - A world-class contaminated site management industry in Canada
 - 3000 sites with remediation activity (2100 of which are fully remediated)
 - Skills development and job training
 - 88 environmental quality guidelines, technical guidance, and other tools published
- The FCSAP does not track or fund all federal contaminated sites. For example, the Northern Abandoned Mine Reclamation program (NAMRP) administered by CIRNAC, addresses environmental risks from OAM sites in Canada's northern territories.

Overview of the Northern Abandoned Mine Reclamation Program

Alex Murray, Program Manager of the Northern Contaminated Sites Program at CIRNAC, explained the Northern Abandoned Mine Reclamation Program.

Key Points:

- The NAMRP (the Program) was launched on April 1, 2020, and is one program under the Northern Contaminated Sites Program at CIRNAC.
- The Program represents another example of how government funding programs can support the remediation of OAM by allowing for longer-term tenders, greater certainty for impacted communities, and increased economic opportunities for Indigenous Peoples and Northerners. The long-term funding facilitates the lengthy remediation work required for these complex sites.

- The Program is funded until 2035 to a value of \$9.1B, although additional funding will likely be required after 2035 to complete the work at each site and establish perpetual care where needed.
- The Program manages eight large, high-risk remediation projects that were previously under the Federal Contaminated Sites Action Plan (FCSAP) but were pulled out due to their complexity:
 - Yukon (5 sites): Faro Mine, United Keno Hill Mines, Mount Nansen Mine, Ketzka River Mine, and Clinton Creek Mine.
 - Northwest Territories (3 sites): Giant Mine, Cantung Mine, and the mines of Great Bear Lake.
- The criteria for inclusion in this program are the same as those used for the FCSAP.
- Each project goes through four stages: (1) Assessment, (2) Project planning, (3) Implementation, and (4) Post-remediation and Close-out.
- Six of the projects are currently in project planning and two are in active remediation (United Keno Hill and the Giant Mine).
- The Giant Mine Remediation Project (GMRP) in Yellowknife remediates a high-profile former gold mine. The project involves long-term containment of highly toxic arsenic trioxide waste, removal of buildings and remediation of surface areas, and remediation of tailings.
- The project moved to full remediation in November 2022 with operations are overseen by a Construction Manager (Parsons Inc). Upcoming activities for 2024-25 include receiving *Fisheries Act* authorization, constructing a water treatment plant, awarding contracts for Core Industrial Area decontamination and deconstruction, and finishing paste backfill for underground stabilization.
- The Faro Mine Remediation Project was once the largest open-pit zinc mine in the world and is one of the costliest contaminated sites in Canada, with risks posed by acid-generating waste rock, tailing, and contaminated water.
- The project is in the project planning stage. Design work, a construction manager and a care and maintenance contractor and joint project delivery model with Public Services and Procurement Canada were recently completed. Next steps in 2024-25 will focus on regulatory approvals, including the Yukon Environmental and Socio-economic assessment process.

Central Mine Remediation – From Vision to Achievement

Justin Kong, P.Eng. PMP., Senior Project Engineer in the Orphaned and Abandoned Mine Program for the Manitoba Ministry of Environment and Climate Change provided an overview of the Central Mine Remediation project in Manitoba and the rationale behind decision-making.

Key Points:

- The Central Mine is located northeast of Winnipeg near the Ontario boarder, within Nopiming Provincial Park and near three First Nations communities.
- To date, remediation work has included constructing a provincial highway (PR 304) through the site with a bituminous geomembrane layer and tailings capping on the east side of the highway.
- The current work is focussed on the west portion of the site and has included
- The project team includes agencies within the Manitoba government (e.g., Climate, Environment, and Biodiversity, Parks, Forestry, Historic Resources, Crown Land Management, Wildlife, Mines, and the local conservation office), consultants, contractors, and local communities (e.g., First Nations, cottage owner associations).
- The team began by collecting feedback from the community and stakeholders about the work completed to date, and focused on addressing key challenges that were identified:
 - To improve communications with stakeholders and local communities, internal stakeholders were involved from early in the design phase along with proactive

- communications and two-way dialogue were undertaken with internal and external stakeholders.
- To address issues related to lack of local clay availability, mine tailings were capped with a High-Density Polyethylene (HDPE) geomembrane liner and an additional geotextile layer.
 - Risks from soft tailings that impact highway construction were addressed by disclosing those risks to bidders and reviewing the contractor's plans closely.
 - To encourage local economic development, a target for 10% of construction contracts delivered with Indigenous involvement, and the contractor hired workers from nearby Indigenous communities during construction and survey works, with plans to continue doing so for potential long-term maintenance works.
- Recent progress has included tailings greening to capture tailings runoff, shaft capping and stockpiling rockfill on site, and installing the liner, geotextile and rockfill.
 - The Central Mine Remediation project is an outstanding model of OAM remediation that demonstrates what can be achieved through a thorough examination of each step and decision, engagement and attentiveness to stakeholder feedback, and innovative 'what if' approach to solutions.

Nunavik Abandoned Mineral Exploration Sites Restoration

Aglaé Boucher-Telmosse, Environmental Specialist - Environment & Land in the Kativik Regional Government, and **Nancy Dea**, Environmental Specialist & Project Coordinator, presented on the Nunavik Abandoned Mineral Exploration Site Rehabilitation Project and the highly collaborative nature of the initiative.

Key Points:

- The Nunavik Abandoned Mineral Exploration Site Rehabilitation Project remediates exploration work that was conducted before 1975, when a legislative framework was first put in place.
- The project was initiated in response to concerns from Inuit communities about abandoned materials in Nunavik the 1990s and a media report in 2006 calling Nunavik "la poubelle minières du Québec" (the trashcan for the mining industry). This raised reputational concerns for industry, who stepped up to participate in the clean-up with communities concerned about the health of their environment.
- The sites remediated through the project were identified based on a report released in 2003 that identified 90 sites of concern in the area.
- An agreement was signed in 2007 between four main partners to clean up 18 sites:
 - Kativik Regional Government (KRG) managed the clean-up work;
 - Makivvik ensured Nunavimut rights were respected;
 - Fonds Restor-Action Nunavik (FRAN) contributed \$1.5M on behalf of the mining industry; and
 - Quebec's Ministère des ressources naturelles et des forêts contributed \$4.1M.
- To ensure community involvement and the project's success, partners collaborated with many local partners including local employment agencies, northern villages, landholding corporations, and transportation companies.
- Sites were prioritized based on impact. Work was conducted seasonally, beginning with the high priority sites. Additional sites were added as the project progressed.
- At each site, steps included:
 - initial meeting and inspections with the nearest communities,
 - cleanup work, including transferring old fuel and other hazardous materials, cutting larger pieces of heavy equipment, gathering and crushing other waste, and disposal –

- transporting materials off site via marine containers, burning non-toxic waste, and leaving buildings when requested by the community), and
 - final inspection of the site with community representatives and elders.
- The largest site took 10 years to clean up, including the dismantling of 8 buildings and 30 pieces of heavy machinery.
- A total of \$7M was invested in the project between the Quebec government, industry, and Indigenous communities.
- Over 330 temporary jobs were created through the restoration projects, primarily for the mainly Inuit restoration teams.
- 126 sites were inspected, with 101 sites cleaned up and the remaining 25 were considered minor / negligible.
- More than 1.5M lbs of material were removed from the land, including heavy equipment, buildings, and other waste material.
- The project has influenced similar projects elsewhere in Northern Quebec, and in Labrador and the Yukon. It also prompted legislative improvements, including in provincial monitoring of mineral exploration work.
- A short documentary on the Nunavik Abandoned Mineral Exploration Site Rehabilitation Project is available at: <https://www.youtube.com/watch?v=L094Vh8oCew>.

Assessing Climate Change Risk on Abandoned or Orphaned Mine Sites

Erik Sparling, Vice President of the Climate Risk Institute, presented on why undertaking climate change risk assessments for OAM sites is important and the types of assessments performed by the Institute.

Key Points:

- The Climate Risk Institute (CRI) is a national not for profit organization, focused on climate change risk assessment, action planning, and improving climate resiliency.
- High impact climate events in Canada are increasing in number and severity. Implications for mining include:
 - Warmer temperatures and thawing permafrost can undermine infrastructure stability and site access, particularly when it was built using old assumptions.
 - An increase in severity of extreme weather can challenge the resilience of tailings pond dams.
 - Climate induced droughts and altered precipitation patterns may affect water and energy availability, impacting processing, site rehabilitation and other aspects of projects (such as water balance of operations, restrictions from water withdrawal).
- A focus on adaptation in mine design and construction is needed to mitigate harm caused by these events.
- Today's infrastructure needs to withstand current and projected climate impacts and support the goal of net-zero emissions by 2050.
- An approach that combines "carrot" (training, climate data, guidelines) and "stick" (funding, standards, professional obligations, law) is starting to yield results.
- Assessing climate change risk is a fundamental step for OAM remediation. It includes:
 - scoping and identifying relevant existing and future climate conditions,
 - characterizing natural areas, project sites and hazards,
 - identifying and estimating vulnerabilities and the potential severity of consequences from hazards occurring, and
 - recommending actions to reduce climate risks and evaluate resilience opportunities.
- Canada has long been a leader in infrastructure and climate change risk assessment.

- The Public Infrastructure Engineering Vulnerability Committee (PIEVC) was established in early 2006, developing a protocol to complete a climate risk assessment. Today, there are many PIEVC resources available.
- Skills development is a key component of the national adaptation strategy, across key professions. Many of these professions work on OAMs. The Climate Risk Institute delivers customized courses.
- Engagement opportunities include:
 - CanAdapt: a mining practitioner network that is actively looking for members: <https://canadapt.network>
 - Implementation Insights: a project focused on empowering practitioners in natural resource sectors to move from adaptation planning to implementation

Presentation and Panel Discussion: The Potential and Challenge of Creating Value from Mine Tailings

The presentation and panel discussion aimed to deepen understanding of the potential of creating value from mine tailings as well as its challenges, explore key considerations that include technical, geological, innovative, regulatory, and the distribution of liabilities, and to build more effective collaboration between stakeholders.

The panel discussion was introduced and moderated by Julie Deriaz, Scientific Officer, Critical Minerals Secretariat, CanmetMINING at Natural Resources Canada with five panelists:

- John Thompson, Chief Innovation Officer, Regeneration
- Olenka Forde, Senior Environmental Scientist, Regeneration
- Marie-Pierre Paquin, Head of Science and Partnerships of the Closure Team, Rio Tinto
- Dr. Michael Parsons, Research Scientist, the Geological Survey of Canada (GSC) Atlantic at NRCan
- Dr. Nadia Mykytczuk, President and CEO, Mining Innovation, Rehabilitation and Applied Research Corporation (MIRARCO), and Executive Director of the Goodman School of Mines at Laurentian University

Key Points:

Julie Deriaz introduced the panel discussion topic and her work on the Canadian Mine Tailing Inventory:

- Creating value from mine tailings starts with data. A Canadian Mine Tailing Inventory is being made to help stakeholders.
- It is important to assess risks, hazards, liabilities and reprocessing opportunities of tailings. Further, sampling requirements must be understood and applied.
- To overcome challenges, risks must be distributed to reduce liabilities and barriers to start up.
- Mining acts are starting to be updated to include mining value from waste considerations, which will further normalize practices to obtain value.

John Thompson presented on collaboration and innovation to create value and restoration outcomes at OAM sites:

- Regeneration is a restoration and re-mining social enterprise that converts legacy mine sites into a source for responsible minerals and creates ecological and community assets.
- Partnerships are fundamental. Regeneration partners with governments, First Nations and other communities, and companies to bring together the value chain from source to product.
- There is no one-size-fits-all approach to creating value at OAM sites. Technology differs and is complex for each site, so there must be local engagement with technology providers.

- Land value of legacy sites and credits (e.g., CO₂, restoration, biodiversity) are assets that may entice industry.
- Challenges and considerations include evaluation and prioritization of sites, waste management and repurposing, water management, restoration and land use issues, the uncertainty of historical liabilities, and controlling new liabilities.

Olenka Forde considered approaches to value creation, technology and collaboration:

- Approaches to value creation, technology, and collaboration are important.
- Collaboration is key to advance restoration and value creation. Regeneration formed partnerships out of last year's OAM Workshop, but more opportunities for discussion, both site-specific and through platforms for conversation are needed.

Marie-Pierre Paquin provided perspectives on innovated solutions, remediation strategies, and collaboration of legacy sites:

- Remediation and closure are complicated at both legacy and operating sites and require a multidisciplinary engagement approach.
- Teams must work together. Rio Tinto's closure team works on remediation strategies in collaboration with the R&D team, which looks at innovative solutions.
- Rio Tinto's closure team collaborates with academia, national labs, and startups to tackle issues, giving a fuller view of potential solutions.
- The closure team engages in the venture part of Rio Tinto that invests in R&D.

Dr. Michael Parsons discussed long-term site management, critical mineral distribution, and the resource potential of the abandoned Stirling Mine in Nova Scotia:

- The remediation of the abandoned Stirling Mine is a collaborative project between the GSC, CanmetMINING, and the Nova Scotia Department of Natural Resources and Renewables.
- Reprocessing legacy tailings for their critical mineral content could help to reduce their environmental impact, but significant challenges remain concerning economics, technical feasibility, and regulatory barriers.
- Repurposing land is an opportunity for value creation.
- The project focuses on the effects of weathering on the distribution and mineral hosts of critical minerals in historical tailings and the most effective methods of reprocessing for critical mineral recovery.

Dr. Nadia Mykytczuk explained MIRARCO's efforts to obtain the value of mine wastes through the scale-up and derisking of biotechnologies:

- Canada's 200 active mines and approximately 10,000 OAM sites are the single largest source of waste produced by any natural resources industry, with around \$10 billion in liability costs associated with the ongoing treatment of mine wastes.
- There are also significant financial opportunities from reprocessing mine tailings.
- To meet critical metal demands of tomorrow, the Canadian mineral resource sector must look beyond traditional practices and invest in innovative and sustainable technologies and expertise.
- All potential uses of waste must be evaluated, and stakeholders should pilot different technologies without assuming the liability for these sites.
- MIRARCO's focus is on obtaining value from mine wastes through biotechnology.
- One strategy to harness value is microbially leached wastes, which use bacteria to separate out various elements. It is a low carbon, "greener" approach than other alternatives.

- MIRARCO's Centre for Mine Waste Biotechnology accelerates the scale-up and de-risking of biotechnologies for sustainable mine waste valorization and remediation.
- The Centre's biotechnologies advance Ontario's and Canada's position as a global supplier of critical minerals through addressing technical challenges, creating jobs and on-the-job opportunities, attracting talent, and growing companies in the mining supply chain.

Additional Key Points:

- Effective OAM site remediation involves complex, site-specific solutions to challenges like remote locations, historical liabilities, and regulatory hurdles, which require collaboration across multiple sectors, including governments, academia, industry, and technology providers.
- Forming and strengthening partnerships requires transparency and respect – between governments, industry, academia and Indigenous communities. Different perspectives paint a fuller picture of the reality of the mining process.
- Federal, provincial, and territorial governments should support partnerships and technological advancements with industry.
- Liabilities can be reduced when governments and industry work in mutual support.
- How “value” is defined and what “success” looks like must be determined through engagement with local and Indigenous communities. FPTs and industry may have different definitions or perspectives than local communities, and engagement with communities is needed to establish common understanding and define common goals.

Presentation Series: The Economic Potential of OAM Remediation

This presentation series provided an overview of value creation and potential economic opportunities available with OAM remediation and discussed relevant considerations in assessing the viability of these opportunities.

Waste to Riches: Abandoned Mines in a Circular Economy

Dr. Peter Kondos, CEO of YaKum Consulting Inc., provided an introduction to the concept of circularity, shared two examples of how his company is transforming mine waste into value, and shared important reflections on this work.

Key Points:

- YaKum is a consulting firm that has been involved in a number of startups focused on recycling minerals and metals and eliminating waste in the mining industry.
- Key considerations for obtaining value from OAM sites include incorporating best environmental practices, determining financial feasibility, and implementing circular economy principles, achieving a shift in mindset to view waste as an opportunity for value creation, and considering how wastes can be combined with other products for new purposes.
- Every step in the mining process creates waste and each step is an opportunity for creating new value.
- Just 1% of rare earths and other materials used in permanent magnets are currently recycled worldwide.
- By transforming waste into value, the goal is to have no tailings at all.
- The emerging field of circular economy and mining value from waste is attracting young, highly intelligent, motivated people.
- One of the startups YaKum works with, Canadian Minerals Technologies (CMT) Inc., was one of three companies that won an opportunity challenge by Vale to find innovative solutions to

unlock sustainable and financially viable solutions to recover the valuable metals and minerals contained in pyrrhotite tailings, including nickel, iron, sulfur, and other elements.

- The process is based on mixed chloride media, that would ideally separate various materials of interest (iron oxide, copper metal, cobalt product, nickel product, platinum group metals product, and others) from the pyrrhotite tailings. It has been tested in a pilot and demonstration phase.
- A second project YaKum is involved in is a partnership with Sylvis to combine mine waste with biosolids from municipal wastewater treatment plants to produce soil additives that performs better than other fertilizers and help with mine tailings restoration.
- The company was part of NRCan reclamation pilots in Sudbury and established a long-term grassland restoration program at the OK Ranch in Clinton BC.
- These two projects represent examples of fresh ideas needed to valorize these tailings as a possible source of new feed material for EV technologies and show how partnerships can help to advance OAM restoration.

An Analysis of North American End-Use Markets for Silica

Michael Dobner, National Leader of the Economics & Policy Practice, and **Alex Heroux Messier**, Senior Associate, Economics & Policy at PricewaterhouseCoopers LLP, presented their analysis of various end-use markets for silica to assess the potential for silica reprocessing from mine waste.

Key Points:

- CanmetMINING and the Canadian Minerals and Metals Plan Secretariat engaged PWC to assess the end-use markets for silica to assess the potential for reprocessing silica in Canadian mine waste and tailings.
- Silica makes up a large portion of mine waste and tailings. Reprocessing it can help to reduce the environmental impact of production and minimize waste volumes.
- Ontario and Alberta are the main Canadian producers of silica in Canada, but account for only about 1.4% of global output. China and the USA represent more than 55% of global silica production.
- The study identified 32 end uses of silica and focused on five: 1. solar panels; 2. EV batteries , 3. green tires; 4. concrete (as a binding agent); and 5. water treatment (as a filtration medium).
- Silica must meet strict specifications for different industrial uses, making its suitability highly specific to each application, and high purity silica is needed for solar panels and EV batteries.
- The regulatory framework for mine wastes and tailings is complex and expensive, which presents a barrier. A regulatory framework review nationally and provincially may highlight regulatory challenges and best practices, and benchmarking against other jurisdictions may reveal regulatory models that encourage reprocessing and protect the environment.
- Although lower-quality silica from mining tailings could meet high demand volumes, certain market limitations exist (e.g., uncertain demand, logistical hurdles, and suitability concerns for certain uses). There is limited interest in extracting silica from mine tailings to date.
- Data is limited on the composition of Canadian mine tailings and more study is required to determine economic viability.
- Possible next steps include assessments of tailings and potential buyers to assess the size and viability of the market, regulatory framework review and benchmarking, an assessment of transportation infrastructure and the distance between production facilities and upstream and midstream consumers.

Converting an Idle Mine into a Renewable Energy Complex

Ben Saffron, Executive Advisor at GHD Advisory, offered insight into how an idle coal mine at Tent Mountain Mine in Alberta was converted into a first-of-its-kind pumped hydro and clean hydrogen production facility.

Key Points:

- The Tent Mountain project was an open-pit coal mine in Alberta that ceased operations in the 1980s. It was purchased by Montem in 2014 with the intent of restarting coal operations.
- The proposal for a renewable energy complex with pumped hydro and clean hydrogen production came about in response to significant local opposition to coal operations.
- The project offered a way to deliver a sustainable and stakeholder-accepted alternative project that had strong economic value and was financially viable and technically feasible.
- The project was identified based on 1. using a diverse set of skills and knowledge to view the problem in different ways; 2. undertaking a logical and iterative development process; and 3. establishing a steering committee of key advisors to move the project forward.
- Key attributes of the project include:
 - It involves Indigenous communities through an ownership stake in the facility, a positive solution aligned with First Nation's values.
 - It has high positive societal and environmental impacts through creating long-term jobs in the area, reducing emissions, minimizing environmental impacts, including no fish habitat interaction, and supporting the energy transition well into the future.
 - It is operated by a new company called Evolve Power, created by Montem.
- In 2023, TransAlta purchased 50% of the project and has full government support to move forward.
- Utilizing the idle mine at Tent Mountain offers a novel approach to re-imagining and re-purposing an idle coal mine that achieves its objectives while being technically feasible.
- The compelling transformation of the Tent Mountain renewable energy complex is an example of what is possible when multiple, diverse skills and thinking are brought together to solve a complex challenge.

Sustainable and Circular Economy Remediation Adsorbents and Flocculants

Paul Pede, President/CEO, and **Marvin Pelletier**, Chief Operating Officer of Carbonix Inc., presented on sustainable and circular economy remediation through Carbonix's products such as adsorbents and flocculants with upstream and midstream applications.

Key Points:

- Carbonix Inc. is Canada's only Indigenous-owned deep tech company, specializing technology and innovative carbon-based products for the resource extraction and energy storage markets.
- The company's Carbon Scaffold Platform converts abundant low-value, high-sulfur petroleum coke and turquoise hydrogen precipitated carbons into high-value products.
- The technology was developed out of an interest to identify ways to remediate OAM in a way that could create value and income.
- Carbonix offers a diverse product portfolio, including adsorbents, flocculants, synthetic graphite, and conductive carbons/polymers for various industries, including upstream industries like oil sands and resource extraction, as well as mid-stream industries, and energy storage.
- They have three R&D labs and a pilot plant in Ontario, and their unique multi-disciplinary approach includes material science, chemistry, process engineering, sustainability, generative A.I., and Indigenous knowledge.

- Carbonix has five patent families pending for its various technologies.
- Upstream applications focus on the treatment and reclamation of fluid oil sands tailings and water to ensure compliance with environmental regulations and sustainable ecosystem management. Their technology seeks to achieve fluid tailings faster and more cost-effectively than existing methods, to facilitate greater water recycling and reduced raw water intake.
- Midstream applications focus on achieving higher energy density in battery anodes to facilitate required energy demands.
- Carbonix is ready and able to help address OAM and works with northern Ontario communities but has faced a number of challenges:
 - Lack of demand for Carbonix technologies, as OAM are typically only remediated when they pose a human health issue.
 - Lack of access to OAM sites in order to characterize the tailings and develop products.
 - No uptake from governments to support Carbonix to scale up.
- Data and results are the primary focus at the moment, and while there is an intention to circle back to critical minerals projects, concentrations are not heavy enough to make a business case at the moment.
- Combining innovation, market presence, and vertical integration, Carbonix is uniquely positioned to capitalize on emerging opportunities and drive sustainable growth.

Day 2: October 25

Panel Discussion: Considerations and Approaches in Clean-up, Restoration, and Remediation Science and Practices

The panel demonstrated considerations and approaches, and discussed lessons learned, gaps, and scientific advancements that could inform current and future understanding in the clean-up and restoration of active mine sites, as well as in the remediation of OAMs.

The panel was introduced and moderated by **William (Bill) Price**, Mine Drainage and Reclamation Expert, CanmetMINING in Natural Resources Canada, with three panelists:

- C.D ('Lyn) Anglin, Principal Consultant, Anglin and Associates Consulting
- Paul Gammon, Environmental Geochemist, Geological Survey of Canada, Natural Resources Canada
- Richard R. Goulet, Environmental Biogeochemist, Applied Geochemistry and Impact Assessment Group, CanmetMINING, Natural Resources Canada

C.D ('Lyn) Anglin spoke of her experiences as chief scientific officer of the Mount Polly remediation project:

- Mount Polly can be viewed as a remediation success story, with lessons to inform current and future initiatives.
- The mine at Mount Polly has reopened and agreements with Indigenous Peoples have been redesigned. The tailings have been recovered, 800 trees have been replanted, and salmon and trout populations are thriving.
- A key factor of success was an openness and willingness between all groups to communicate and share input and results, which led to greater collaboration.
- There was also open dialogue with British Columbia's Ministry of Environment and Climate Change, responsible for the Environment Management Act.

- Mount Polly successfully integrated the human aspect of remediation, including dozens of professionals from various disciplines and strong partnerships with Indigenous Peoples. Local knowledge and contractors came from First Nations through participation agreements. Local employees were key, and included fish, habitat, and construction experts. Academics and researchers were granted access to the site once it was safe to study the site and learn from the spill.
- An adaptive management approach was also used and this flexibility allowed the teams to change their approach when results of studies suggested what would work best.
- Managing remediation projects relies on multidisciplinary approaches and collaborative partnerships, qualified professionals, and local knowledge. Challenges of managing projects may be overcome with an adaptive management approach to reach consensus.
- Each mine is unique, so there is no “one size fits all” approach to remediation.

Paul Gammon presented on clean up, remediation, and restoration (CRR) of mine sites and the need to identify, apply, and adopt techniques to each site:

- There are diverse and well-established techniques for CRR. The trick is to identify, apply, and adapt those techniques to the needs of a site.
- To do so, a conceptual environmental risk profile is recommended that identifies the contaminant source(s) and pathway (s), ecosystem risks, human health risks, gaps that need plugging on timing, data, and knowledge, and team requirements.
- Approaches should be multidisciplinary to bring different knowledge into remediation efforts. The approach determines the team you build.
- CRR’s aims include identifying uniqueness of sites, with scopes and methods determined by site characterization.
- FPT governments have a role in being the repository and manager of data. Having a centralized repository would help identify gaps in data and knowledge.
- CRR requires sufficient quantities of good quality, relevant data, and knowledge gaps in data quality, quantity, and relevance present key challenges.
- Efficiently eliminating critical data gaps and communicating critical data needs across different teams is essential.
- Most CRR sites have unknown unknowns – unexpected surprises requiring solutions – that also need to be communicated across different teams.
- Key knowledge gaps in the Canadian context include little research on environmental chemical processes in permafrost terrains; unique nature of boreal environments require significant technique adaptations; implications of climate change in permafrost and boreal regions for CRR and OAM require a greater focus; and training of highly skilled CRR practitioners is insufficient.
- Another challenge is that environments are highly diverse and heterogeneous, and regulations cannot currently cover all potential eventualities. Monitoring data, for example, to improve regulations where possible.

Richard Goulet revealed risk management’s role in environmental protection from mine planning to closure:

- Mining involves multiple phases, including planning, construction, operation, and decommissioning.
- Environmental risk assessments are conducted at all stages to predict potential impacts. This regulatory process forms a circular loop, ensuring continuous monitoring and corrective actions throughout the mine’s lifecycle.
- Risk assessment and management are essential for effective mine waste management and environmental protection throughout all stages of mining projects.

- Discussions must be had about what is needed at the project planning stage, during operations, and at the project closure stage.
- At the planning stage, stakeholders must know source term characterization and source term input for environmental risk assessment models. The risk assessment models predictions are based on the mitigation measures for mine waste and effluent management. These predictions should be used to verify if mitigation measures work.
- Gaps at the planning stage include new, emerging risks associated with critical mineral mining, and predictions made at the impact assessment stage need to be considered during environmental monitoring. Environmental monitoring should confirm the impacts are mitigated.
- During mining operations, there may be gaps in source term characterization, environmental monitoring, adaptive management, and risk assessment.
- A major gap in closure planning is insufficient financial guarantees to conduct monitoring and, if required, to implement mitigation measures.
- Risk assessment models are essential for effective mine waste management. The challenge of these models lies in controlling access to this tool as a project transition from one proponent to another or between different FPT regulators.

William (Bill) Price closed the session with the following recommendations:

- Those interested in regulation and how monitoring fits into the process should consult the [BC Metal Leaching Acid Rock Drainage \(ARD\) Guidelines](#), which explain there are no one-size-fits-all universal standard plan for mine closure.
- Successful mine closure requires practitioners to develop well informed, proactive, site-specific plans, which requires a diligent, methodical, phased approach.
- No mitigation measures are without challenges or risk. Most forms of mitigation require indefinite monitoring and maintenance.
- Knowledge gaps and impediments need to be proactively identified and managed.

Panel Discussion: Building Capacity, Trust, and Supportive Partnerships with Indigenous Peoples

The panel worked to identify opportunities and strategies for involving Indigenous Peoples and their communities in remediation and to build capacity, trust, and supportive partnerships.

The panel was moderated by **Heather Swan**, VP of Reconciliation, Indigenous and Community Engagement (ICE), with four panelists:

- Michael Fox, President & CEO of Indigenous and Community Engagement (ICE)
- Dr. Arn Keeling, Professor in the Department of Geography at Memorial University of Newfoundland
- Stephanie Rocca, Mine Rehabilitation Program Coordinator in the Ontario Ministry of Mines
- Caroline Maclsaac, Program Officer, Mining Shared Value for Engineers Without Borders Canada

Michael Fox explored ICE's work on Indigenous-led monitoring of OAM sites:

- Building capacity, trust, and supportive partnerships with Indigenous Peoples begins with enabling conditions for autonomy of local communities. This can be done by expanding Indigenous-led monitoring at abandoned mine sites, with capacity-building and training for Indigenous communities.
- Indigenous-led programs are emerging, including federal Indigenous Guardian Programs, that support Indigenous communities in environmental monitoring.

- An example of current Indigenous involvement is in sample collection on active sites.
- Next steps for ICE include supporting Indigenous-led monitoring initiatives at OAM sites and developing training and capacity-building programs for Indigenous communities in environmental monitoring for OAM sites.

Dr. Arn Keeling addressed social and environmental legacies at abandoned sites:

- There is a need to collaborate with Indigenous communities to develop culturally sensitive frameworks that integrate Indigenous knowledge into mine remediation plans.
- Facilitating dialogue to address historical mining impacts on Indigenous communities – environmental, social, and emotional – and colonial legacies at OAM sites is a significant step towards partnership and reconciliation.
- Those involved in remediation must ensure that Indigenous consultation plans reflect community knowledge, health, and cultural practices, and include specific training for Indigenous communities on regulatory frameworks.
- Sustainable practices include culturally informed reclamation and the integration of community knowledge based on addressing historical impacts.

Stephanie Rocca provided an overview of Indigenous participation in rehabilitation of Crown-held abandoned mines in Ontario:

- There is a need to establish early-stage Indigenous engagement and enhance Indigenous Procurement Programs for remediation projects, which Ontario does by prioritizing Indigenous consultation early in the mine rehabilitation process and by leveraging its Indigenous Procurement Program.
- Engaging with communities requires knowledge of regulatory context, guidelines, statutes, and community context. Some operators and owners may start from scratch without any preexisting relationships.
- Closure plans need to be part of a robust engagement. Community engaged closure plan reviews need provide details of closure plans.

Caroline MacIsaac discussed Mining Shared Value's Local Procurement Checklist and the Community Guidance to Support Indigenous Procurement in Mining:

- Mining Shared Value focused on exemplary practices when developing its [Local Procurement Checklist and Community Guidance Support for Indigenous Procurement in Mining](#) for the Canadian Minerals and Metals Plan.
- The Local Procurement Checklist advances economic reconciliation through procurement and hiring practices at both active and abandoned sites.
- Next steps for Mining Shared Value include ensuring Indigenous Procurement Programs are applied broadly in OAM remediation projects, prioritizing Indigenous-owned businesses and encouraging partnerships.
- The Local Procurement Checklist could be rolled out within NRCan and across other relevant GoC departments to standardize Indigenous supplier engagement and partnership-building.
- Economic reconciliation can be influenced through hiring and training. Employers should create dedicated hiring, training, and partnership programs to support Indigenous-led projects in reclamation, fostering economic independence and self-determination in the sector.

Additional Key Points:

- A commitment to economic reconciliation, Indigenous procurement, transparency in communications, data sharing, relationships and enabling communities to exercise autonomy over remediation of OAM sites is critical to strengthening partnerships with Indigenous Peoples.

- Engagement and consultation should address the cumulative impacts of mining on Indigenous land, include Indigenous values and needs in remediation, include cultural preservation in planning, and focus on building community partnerships for lasting impact.
- Indigenous communities also require specific training on regulatory frameworks.
- Establishing data sovereignty protocols is important to ensure Indigenous groups retain control over shared cultural and ecological knowledge, to respect intellectual property rights, and to promote responsible and transparent data use.

Breakout Discussions

Topic 1: Building Strong, Supportive, Respectful Partnerships between Indigenous Peoples and Industry

Facilitators:

- Mary-Carmen Vera, Advisor & Facilitator, Cree Mineral Exploration Board
- Michael Fox, President & CEO, Indigenous and Community Engagement
- Heather Swan, VP of Reconciliation, Indigenous and Community Engagement

Key Points:

- Strong, supportive, and respectful partnerships between Indigenous Peoples and the mining industry need to respect environmental concerns.
- Examples of partnerships include:
 - The Nunavik Abandoned Mineral Exploration Site Rehabilitation Project cleaned up exploration sites in collaboration with Inuit. Project management was led by the Inuit, centred on shared objectives, which built confidence in the communities. Early consultation and communication in the community's language of choice were important in this working relationship.
 - In a BC Abandoned Mines project, initial resistance from a First Nation was overcome by taking time to build trust, being transparent, and understanding the community's internal capacity constraints. Over time, willingness to collaborate improved.
 - Indigenous Peoples and Industry have partnered in the Faro Mine Remediation Project (FMRP) in the asserted traditional territory of the Kaska Nation. There is ongoing consultation and incorporation of input, FMRP embraces the use of the Kaska language, provides opportunities for staff to participate in cultural events, and offers training opportunities for Indigenous Peoples, apprenticeship, mentoring, post-secondary course work, and degrees. Indigenous procurement and subcontracting (e.g., Indigenous opportunities considerations).
- Significant barriers to building strong, supportive and respectful partnerships include trust issues stemming from past negative experiences of Indigenous communities with industry, resource and capacity challenges of Indigenous communities for reviewing technical reports, shifting timelines and information gaps, and differing goals of stakeholders.
- Barriers may also be overcome by industry helping to build capacity within First Nations through funding and training programs that empower communities. Other useful strategies include using clear, plain language, and visuals to help Indigenous communities understand complex, unfamiliar topics and enhance trust.
- Partnerships can be built by aligning training timelines with project timelines to avoid gaps between training and job availability.

Topic 2: Developing more collaborative and effective partnerships between Governments and Industry

Facilitators:

- Jennifer Welles, Director, Energy and Mineral Development Division, New Brunswick Department of Natural Resources and Energy Development
- George MacPherson, Former Director, Mineral Management, Nova Scotia Department of Natural Resources and Renewables
- Melanie Campbell, Director of Strategic Policy, Policy and Economics Branch, Lands and Minerals Sector, Natural Resources Canada
- Danielle Morrison, Director, Regulatory Affairs, Mining Association of Canada
- Aviva Silburt, Deputy Director, Canadian Minerals and Metals Plan Secretariat, Policy and Economics Branch, Lands and Minerals Sector, Natural Resources Canada

Key Points:

- There is a need for more collaborative initiatives between governments and the mining industry on OAM remediation. OAM sites are a government liability and finding solutions to overcome this critical issues is paramount for governments.
- Examples of collaborative remediation work funded by the Quebec government include:
 - Manitou Mine: The site had acid generating tailings and other environmental concerns. The province collaborated with a company whose process produced neutral tailings that neutralized the acid generating tailings of the mine. The company also re-sloped the site to stabilize it, and built dams, dykes, and drainage. Quebec funded the project and the company managed the site, which lowered the cost to the government.
 - Asbestos Hill: Quebec provided funding and served as a liaison between local communities and the mining companies of two mines, which contributed equipment, logistics, and management.
- The federal government could consider creating a central fund akin to the US EPA Superfund, where mining companies contribute to a national pool for remediating abandoned sites. Existing programs, like ECCC's Environmental Damages Fund, could be expanded to increase industry contributions.
- There is a need for safe spaces where governments and industry feel comfortable sharing successes and failures. There is often hesitancy from industry and government to admit failures due to liabilities. Sharing site-specific case studies that include practices that worked and did not work is valuable.
- Trust-building between mining companies, governments, and communities is essential for effective mine closure and reclamation. Local engagement and partnerships can ensure that all stakeholders are involved in decision-making. Transparency is central to developing partnerships.
- Barriers to partnerships between governments and industry include:
 - The lack of clear regulations and the challenges around transferring liabilities. When a company goes bankrupt or abandons a mine, FPT governments may inherit the liability, which can be challenging for public authorities.
 - Risk-aversion to support the development and adoption of technology. OAM remediation and reclamation is extremely sensitive. This makes most technologies currently available and advanced technology expensive and/or infeasible, making the remediation process even more difficult.
- Barriers may be overcome by partnering with universities to come up with new solutions that are tailored to the region for the process.

- Progressive reclamation may also help overcome difficulties in OAM remediation. The focus should be on proactive mine design that reduces the need for extensive reclamation, including avoiding tailings through technologies like dry-stack tailings, biomining, and designing mines that require less backfilling or material movement.
- Governments must carefully study sites instead of immediately jumping into cleaning them. A comprehensive study for a full understanding of what the site contains is needed to make sure the cleanup method being used is the most effective. By rushing into operations, new problems could be uncovered during the work, leading to money being wasted on ineffective cleanup efforts.
- Overcoming barriers involve matured relationships and communication. There are knowledge keepers in communities, and governments and industry must engage those in the community who are coming up and can help translate.
- The reclamation team should engage youth who may have both traditional knowledge and Western education and can better communicate the needs and concerns of the community.

Topic 3: Developing more Collaborative and Effective Partnerships between Indigenous Peoples, Industry, and Researchers/Consultants

Facilitators:

- Dr. Arn Keeling, Professor, Department of Geography, Memorial University of Newfoundland
- Lynn Barber, Manager, Strategic Initiatives, Canadian Standards Association
- Kathleen Wood, M.A., Director, Suslop
- Caroline MacIsaac, Program Officer, Mining Shared Value, Engineers Without Borders Canada

Key Points:

- Collaborative and effective partnerships have a positive impact on OAM remediation when genuine working relationships are developed over time, contributing to stability. Constant turnover can be jarring for a local community, lead to having to restart initiatives and relationship building, and slow down the remediation process.
- Clarity is needed on liability issues related to tailings; mining companies are wary of pursuing this option if they feel they might end up liable.
- Indigenous Peoples call for an alignment of the project with community goals to establish collaborative relationships.
- More respectful information sharing is required to grow more collaborative and effective partnerships. Misconceptions may be overcome by having researchers and industry embedded in communities, speaking with Indigenous Peoples. Researchers must share their data for truthful and transparent working relationships to foster.
- An understanding of Indigenous culture and two-way knowledge translation are necessary to build effective partnerships. Consultants can act as intermediaries and work with industry and Indigenous communities to translate or bridge the gap.
- A “two-eyed seeing” approach may bridge gaps between Western science and Indigenous traditional knowledge. Both should be integrated into closure plans for mines.
- A barrier to be overcome is low youth engagement. Youth should be brought into the conversation of mining partnerships, at first in the community itself, before being in the room with industry. Youth could translate importance and context for local, Indigenous communities.
- Collaboration must be viewed as more than an obligatory “box-checking” exercise but, instead, as integral to meaningful relationship-building.

Concluding Remarks

The 2nd Annual OAM Workshop's public event brought together FPT governments, practitioners, industry, Indigenous Peoples, non-governmental organizations, and academics from Canada, as well as representatives from international governments. The Workshop provided a forum to explore and build a common knowledge foundation on shared challenges, exemplary practices and lessons learned, and to address capacity constraints and barriers to encourage stronger partnerships and increase economic opportunities that may help advance the remediation of OAM sites across Canada.

There was a high level of engagement throughout both days of the public event. A key message underscored during the Workshop was the importance of continuing to advance OAM remediation to reduce its detrimental effects on the environment and on human health and safety. Advancing OAM remediation in partnership with Indigenous communities is an important step needed to support Indigenous reconciliation and improve public perceptions of the mining industry.

Participants emphasized the value of the Annual OAM Workshop and the importance of having opportunities to discuss common priority issues to establish connections, increase transparency and information sharing, talk through successes and challenges, and collaboratively advance solutions to persistent challenges from both a policy and technical perspective. The Annual OAM Workshop is helping to establish and strengthen networks relevant to OAM remediation, and a number of participants mentioned that they had established important connections and collaborations as a result of the 1st Annual OAM Workshop.

Participants expressed a desire for more opportunities to discuss specific topics in further detail. Smaller events will be planned throughout 2025.

It is imperative to turn our words into action to continue the amazing work on OAM remediation already being carried out by FPT governments, industry, Indigenous Peoples, academia, non-governmental organizations, and all other stakeholders.