



# **Taking Stock of Canadian OAM Remediation**

Charles Dumaresq, VP, Science and Environmental  
Management  
Mining Association of Canada

# Personal Experience with OAMs

- First encountered OAMs in 1988 while working as a summer student on mineral exploration crews as an undergraduate geology student
  - I had zero understanding of the potential problems, challenges, etc
- Did graduate work around Cobalt, ON, looking at tailings geochemistry and downstream water quality associated with early 20<sup>th</sup> century silver mines
  - Not OAMs since they had (and have) an owner, but many similar challenges
  - Still involved in work in the Cobalt area
- Worked for Environment Canada from 1992 to 2015, and with MAC since 2015
  - Member of the National Orphaned and Abandoned Mines Initiative Advisory Committee from 2003 to 2014 and 2015 to when NOAMI was wound down
  - Involved in development of best practice relevant to mine closure
    - Environment Canada's *Environmental Code of Practice for Metal Mines*
    - MAC's requirements and guidance for tailings management as well as guidance for climate change adaptation



# Where We've Come From

- The multi-stakeholder National Orphaned and Abandoned Mines Initiative (NOAMI) was launched in 2002 at the request of Canada's Mines Ministers
  - Established in response to increasing concern through the 1990s, across jurisdictions, about OAMs
- At that time:
  - OAMs across Canada were causing ongoing environmental impacts and posed risks to human health and safety
  - Few, if any jurisdictions had comprehensive inventories of OAMs, although many sites were known to be problematic
  - Financial and legal liabilities associated with OAMs were not well understood
  - Funding to remediate OAMs was limited to non-existent, depending in the jurisdiction



## Where We've Come From (cont'd)

- NOAMI tasked with studying various issues and initiatives pertaining to the development of partnerships in the implementation of remediation programs across Canada
  - NOAMI's role was not direct involvement in remediation work
  - Goal was to identify and reduce barriers, facilitate collaboration, and help to catalyze OAM remediation across Canada
- NOAMI fostered dialogue and knowledge sharing and helped raise the political profile of problems regarding OAMs
  - Held workshops to share experiences and case studies
  - Worked to increase community involvement in OAM remediation
  - Studied issues related to legal barriers to collaboration, funding approaches, management of long-term liabilities, approaches to relinquishment, and cost estimation
  - Established national OAM inventory, functioning as a one-window portal to access provincial/territorial inventories



# Where We Are

- Since the early 2000s, significant progress has been made to address problems with OAMs
- NOAMI played an important role but was not the sole driver:
  - Increasing concern and awareness has led to increasing pressure on decision-makers from:
    - People living near OAMs
    - Indigenous groups and communities
    - Environmental groups
  - Auditors General in jurisdictions sought to better understand financial liabilities and steps being taken to reduce those liabilities



## Where We Are (cont'd)

- Jurisdictions have committed funds to OAM remediation
  - Many sites have been remediated
    - Maintenance and surveillance continues, in many cases with long-term active water treatment (eg Kam Kotia and Deloro in Ontario)
  - Work still in progress at others
    - Some are extremely complex and costly (eg Giant Mine in the NWT)
  - Some innovative examples of collaboration with industry (eg Manitou/Goldex in Quebec)
  - Some innovative examples of Indigenous collaboration (eg Faro Mine revegetation program in the Yukon)
  - Some sites where jurisdictions were able to leverage funding from 'descendants' of the original companies (eg Britannia Mine in BC)

*But there is still a lot of work to do*



# Challenges to OAM Remediation

- Remediation remains a site-specific exercise
  - Experience at other sites can help inform/improve remediation
  - However, just because something worked at one site doesn't mean it will work at another
  - Each site needs to be carefully characterized, and potential remediation options assessed and, in some cases, tested before they can be implemented
- OAMs are often in very remote locations that are difficult to access
  - Complicates all aspects of remediation and increases costs
- Long timelines for remediation projects can result in:
  - Challenges securing consistent long-term funding as government priorities shift, or governments change
  - Potential need to adapt to emerging issues, technologies, practices, etc



# Barriers to Progress

- Understandably, the greatest single barrier is money – remediation is very costly
  - Jurisdictions have limited resources to commit to OAM remediation and many different priorities on how to best steward the taxpayer's money
  - In some cases, insufficient financial securities for recently abandoned sites has compounded this problem
- OAM remediation takes a lot of time – more time than many may realize
  - Can lead to frustration and impatience from communities
  - Delays on one project can lead to delays on other projects
- Shortage of people with the appropriate competencies





# Prevention - Improving Mine Closure

- We cannot prevent mines from becoming abandoned as a result of bankruptcies of mining companies
- However, much progress has been made to improve mine closure and prevent/reduce risk and liability to communities and jurisdictions
- Improving mine closure requires:
  - Improved mine closure legislation, including mechanisms for financial security
  - Improved approaches to mine closure by industry to address both technical and social aspects of closure



# Prevention - Improving Mine Closure (cont'd)

- All mining jurisdictions in Canada have mine closure legislation which continues to evolve/improve
  - Financial security critical and remains challenging, including:
    - Estimating appropriate amounts for security for new projects
    - Mechanisms to adjust security amounts in response to either increasing mine impacts or company progress in reclamation
- Saskatchewan's Institutional Control Program provides innovative approach to transfer responsibilities for closed sites from companies to the Crown
  - Supports the safe, environmentally-sound decommissioning of sites
  - Ensures ongoing monitoring and maintenance of reclaimed sites
  - Provides a funding mechanism to cover long-term costs
    - Companies pay into a site-specific monitoring and maintenance fund and an unforeseen events fund
  - Ensures that records and information on the reclaimed sites are preserved



# Prevention - Improving Mine Closure (cont'd+)

- Industry practices and technologies for mine closure continue to improve, such as:
  - Shifting focus from closure to post-closure, including planning towards a post-closure land use plan developed with communities
  - Adopting improved technologies/techniques to avoid or eliminate risk such as:
    - Segregation of sulphide mines to reduce/eliminate risk of acidic drainage
    - Use of filtered tailings to eliminate risk of tailings facility failure
  - Improved technologies for closure, from cover systems to landform design, to surveillance, etc
  - Improved/evolving practices for social aspects of closure to help reduce the economic and social impacts on communities when mines close
- Many good examples of reclaimed closed mines across Canada that remain in the control of mining companies



*But there is still a lot of work to do*



# Challenges for Closure

- Mine closure poses significant challenges for mining companies, regulators, communities, investors, insurance providers, and others
- Perpetual care may be necessary in some cases, but is far from ideal
  - Very costly, and land remains inaccessible for other uses
  - Risk that companies go bankrupt or cease to exist, transferring the risk and liability to regulatory authorities and taxpayers
- Can perpetual care be avoided? What are the alternatives?
  - Can closed mines achieve a state where they no longer pose material risks to people and the environment?
  - Can closed mine sites be converted to an acceptable post-closure land use?
- The answer to these questions is, potentially, yes, but ... it depends



# Barriers for Closure

- The barriers to closing mines have much in common with remediation of OAMs
- Unique characteristics of each site and no 'one-size-fits-all' approach
  - Size of modern mines, including tailings and waste rock facilities, pose challenges not typical for OAMs
- Managing change and shifting corporate priorities
  - Just as governments responsible for OAMs face shifting priorities, so do mining companies, including:
    - Changes in corporate leadership or ownership
    - Changes in market conditions
- Approaches to project costing that discount long-term costs can favour short-term thinking at odds with achieving closure and post-closure objectives
- Strong leadership and good governance needed to ensure that closure objectives are not compromised by short-term financial/operational decisions



*No simple solutions, but we need to do better*



# Thank you! Merci!

Charles Dumaresq

Vice President, Science and Environmental Management  
Mining Association of Canada

[cdumaresq@mining.ca](mailto:cdumaresq@mining.ca)

<https://mining.ca/towards-sustainable-mining/>

