



The Mining Association  
of Canada | L'association minière  
du Canada

# Revisions to the Tailings Management Component of MAC's Towards Sustainable Mining Program

**Charles Dumaresq**  
Vice President, Science and  
Environmental Management



## ABOUT THE MINING ASSOCIATION OF CANADA (MAC)

**THE WINDS OF CHANGE.**

Nickel, steel-making coal, copper and zinc are all critical to the efficiency of the turbines and towers of today's wind farms. Canada is one of the world's top mining countries, and our minerals and metals are found in products of all kinds.

MINING.CA

**CANADIAN MINING**  
Part of just about everything.

A message from the Mining Association of Canada.

- ◆ Established in 1935, MAC
  - ◆ promotes industry nationally and internationally
  - ◆ works with governments on policies affecting the sector
  - ◆ educates the public on mining
- ◆ Members account for most of Canada's production of metals and major industrial minerals
  - ◆ includes metals, diamonds, oil sands and metallurgical coal
- ◆ Associate members comprise a wide range of services and equipment supplied to the mining industry

- ◆ TSM established in 2004
- ◆ Improves environmental and social performance in critical areas beyond regulations:
  - ◆ environmental footprint
  - ◆ energy efficiency
  - ◆ community and people
- ◆ Program strengths:
  - ◆ Performance measured at facility-level, and results externally verified
  - ◆ Monitored by external Community of Interest (COI) Advisory Panel
  - ◆ Encourages continuous improvement



**Environmental Stewardship**

**Communities & People**

**Energy Efficiency**



***Tailings Management***

Biodiversity Conservation  
Management



Aboriginal & Community  
Outreach

Safety & Health Management

Crisis Management



Energy Use & Greenhouse Gas  
Emissions Management

**Community of Interest Advisory Panel**

- ◆ Participation in TSM is mandatory for all MAC members for their operations in Canada
- ◆ Some MAC members also reporting on TSM performance at their operations in other countries: Finland, Turkey, Surinam, Burkina Faso
- ◆ Being implemented but not yet reporting at some mines in: Australia, Greece, Peru, USA
- ◆ Increasing recognition in Canada and internationally that implementing TSM represents best practice
- ◆ Growing interest in TSM around the world
  - ◆ Adopted in Finland and Argentina
  - ◆ Being seriously considered in several other countries around the world, including in South America, Africa and Europe

- ◆ Serious tailings dams failures over the last several decades have led to:
  - ◆ loss of life
  - ◆ severe environmental impacts
  - ◆ significant financial costs to mining companies, governments, and society as a whole
  - ◆ impact on the mining industry's reputation and social licence to operate
- ◆ These incidents underscore that effective tailings management is absolutely imperative
- ◆ Tailings are a business risk
- ◆ Increasing recognition that tailings management is a core business function for mining
  - ◆ tailings failures can break a company, financially



- ◆ Contains five performance indicators designed to confirm whether a facility has implemented a system for responsible tailings management
- ◆ Refers to three Guides that provide more detailed requirements
- ◆ Facilities must conduct annual reviews of their management system and report results to the accountable executive officer
- ◆ TSM uses a 5 level rating scheme: C, B, A, AA and AAA

## Tailings Management Indicators

Tailings management policy and commitment

Tailings management system

Assigned accountability and responsibility for tailings management

Annual tailings management review

Operation, maintenance and surveillance (OMS) manual

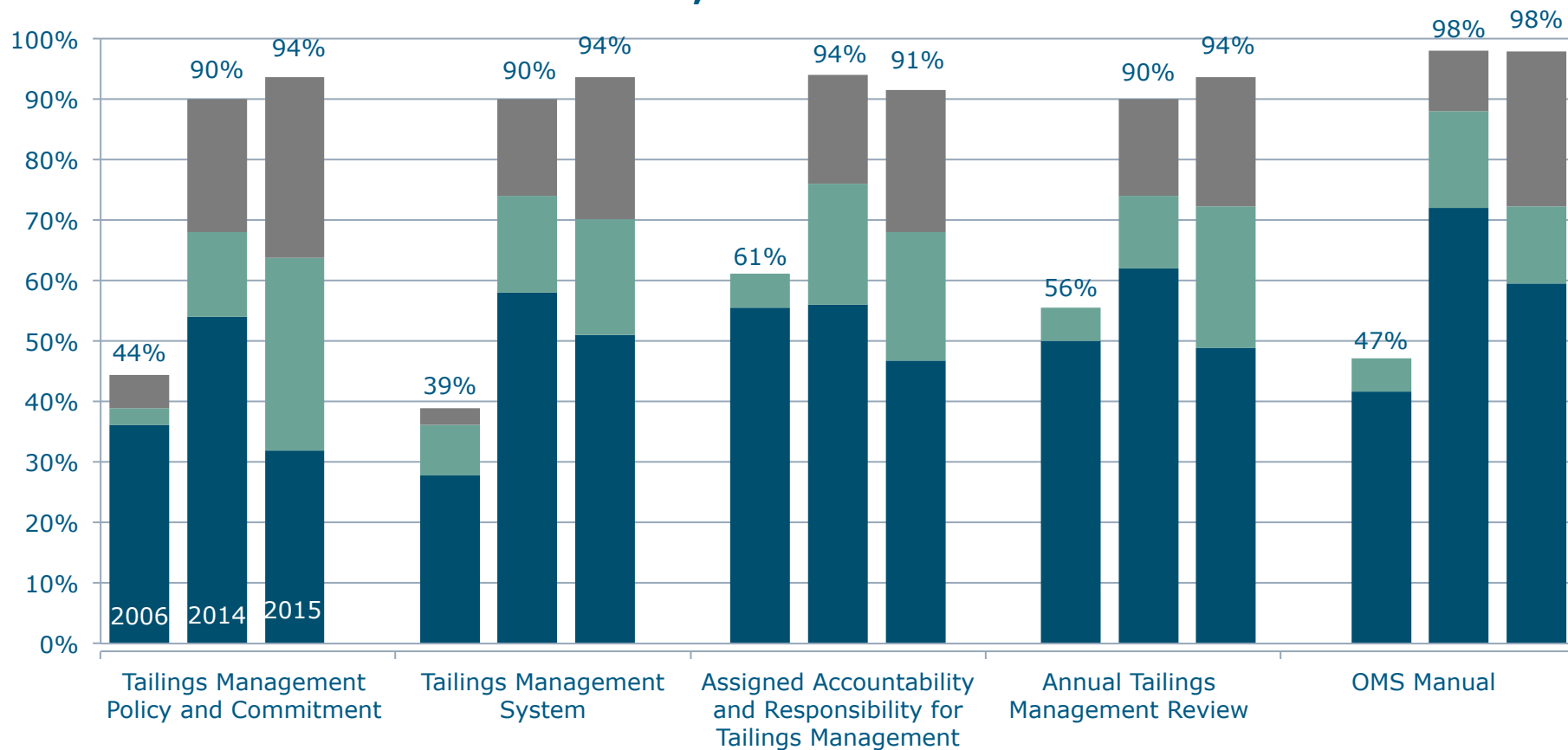


Level A

Level AA

Level AAA

## Tailings Management Assessments Percent of Facilities at Level A or Higher 2006, 2014 & 2015



*Tailings Management Protocol* supported by three guides:

- ◆ *A Guide to the Management of Tailings Facilities* (the Tailings Guide)
  - ◆ First edition: 1998
  - ◆ Second edition: 2011
- ◆ *Developing an Operation, Maintenance and Surveillance Manual for Tailings and Water Management Facilities* (the OMS Guide)
  - ◆ Introduced in 2003
- ◆ *A Guide to the Audit and Assessment of Tailings Facility Management* (the Audit Guide)
  - ◆ Introduced in 2009

- ◆ Soon after Mt. Polley, the MAC Board of Directors decided to conduct an independent review of tailings management component of TSM
- ◆ In early 2015, a panel investigating Mt. Polley released their final report, which recommended that:
  - ◆ “Corporations proposing to operate a tailings storage facility (TSF) should be required to be a member of the Mining Association of Canada (MAC) or be obliged to commit to an equivalent program for tailings management, including the audit function”
- ◆ MAC continued with external review conducted by Independent Tailings Task Force (TF)
- ◆ Also launched a parallel internal review conducted by MAC Tailings Working Group (TWG)



- ◆ TF report presented to MAC Board in November, 2015
- ◆ MAC Board committed to "expeditiously identify how best to integrate the recommendations of the report into TSM for implementation"
- ◆ Board Chair stated that "It is imperative that the industry continuously improves how it works to ensure the safe operation of its tailings facilities"
- ◆ MAC Governance Team coordinating the overall process
  - ◆ TSM Initiative Leaders leading on revisions to Tailings Management Protocol
  - ◆ TWG leading on revisions to Tailings Guide and OMS Guide
- ◆ Aiming to have revisions to Protocol and Tailings Guide completed in early 2017

- ◆ New criteria for Levels A, AA and AAA for each Indicator to increase level of audit or assessment required to achieve each level
  - ◆ Level A = internal audit
  - ◆ Level AA = external audit
  - ◆ Level AAA = external audit and an evaluation of effectiveness
- ◆ Action Plans
  - ◆ Members that have not achieved Level A in all Indicators will be required to develop and publish action plans to achieve Level A
  - ◆ Action plans must be completed within 3 years
- ◆ Proposed that new member application process require prospective members to conduct a gap analysis of their tailings management system against Protocol

- ◆ Indicator 3, Level B:
  - ◆ Now requires assignment of accountability to an executive officer and responsibility for tailings related issues and performance be delegated. These requirements were previously included in Level A
- ◆ Indicator 3, Level A:
  - ◆ Language related to delegation of responsibility for tailings facilities has been strengthened to require that the responsibility is delegated to qualified personnel
  - ◆ A new FAQ has been drafted to describe how facilities can demonstrate that personnel are qualified

- ◆ Indicator 2 of Protocol has been revised to ensure that the tailings management system includes requirements for all life phases of the tailings facilities (site investigation and selection, design, construction, operation and post-closure)
- ◆ Indicator 4 of Protocol has been revised to ensure that annual tailings management review includes:
  - ◆ Process to identify deficiencies and plans for corrective action with timelines
  - ◆ Tracking and reporting progress towards completing corrective actions
- ◆ New Indicator in the Aboriginal and Community Outreach Protocol that will require engagement with COI on issues related to credible risks to public safety, including tailings management

- ◆ Incorporate a risk-based approach as an integral element of Tailings Guide, with tailings facilities managed commensurate with risks (physical and chemical) they pose
- ◆ Risks should be identified, assessed and periodically re-assessed throughout life-cycle of facility
- ◆ Controls critical to management of risks should be implemented
- ◆ Performance against critical controls should be integral to TSM audit and assessment process
- ◆ Non-conformances associated with risk management would carry a greater weight in TSM compared to non-conformances not directly linked to risks posed by tailings facilities



- ◆ Revised Tailings Guide to address best available technologies (BAT) and best available practices (BAP) for tailings management, including:
  - ◆ alternatives to management of tailings as conventional slurry (e.g., filtered and thickened slurried tailings)
  - ◆ practices to reduce overall footprint of tailings facilities (e.g., in-pit disposal and underground backfilling)
  - ◆ co-management in a single facility of other wastes with tailings (e.g., waste rock and treatment sludge)

- ◆ Revised Tailings Guide to require rigorous, transparent process (e.g., multiple accounts analysis) to select tailings management technologies and tailings facility location
  - ◆ Should be greater consideration of closure objectives in the initial selection of technology and facility location
- ◆ TWG developing guidance on independent review of site investigation and selection, design, construction, operation, closure and post-closure of tailings facilities
- ◆ Revised Guide being prepared to ensure it is useful to MAC Members with tailings facilities, and to others

- ◆ TWG has had three comprehensive drafting sessions to work through revisions to Tailings Guide
- ◆ Final draft is in preparation, and will be circulated for input from:
  - ◆ MAC Initiative Leaders and Governance Team
  - ◆ Independent Tailings Task Force
  - ◆ Community of Interest Advisory Panel
- ◆ Seeking approval of substantive amendments to Tailings Guide at MAC Board meeting in March 2017
  - ◆ Will then make final revisions and proceed with editing, translation and publication
- ◆ Once work on the Tailings Guide is complete, the TWG will begin work on OMS Guide

For more information on TSM:

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

Charles Dumaresq  
Vice President, Science and  
Environmental Management  
Mining Association of Canada  
cdumaresq@mining.ca



**YES. THIS WAS ONCE A MINE.**

Bill's Lake is nestled deep in a reclaimed landscape in the oil sands region of northern Alberta. This wetland area features willow-lined shores where waterfowl nest, a larch forest and grassy uplands. Abundant raspberries feed visiting bears. For Canada's mining companies, reclaiming the land we borrow is not just a legal obligation, it's a responsibility we take as seriously as creating jobs, building vibrant communities and generating billions of dollars in tax revenues.

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