Towards Sustainable Mining - Canada Tailings Management Protocol

Version Date: March 2023

Changes in the June 2022 Version of the *Tailings Management Protocol*

The revisions in this version of the *Tailings Management Protocol* (the Protocol) do not make any substantive changes to the performance indicators or criteria described in the previous version of the Protocol, dated February 2019.

The most significant revision is the mandatory application of the Protocol to inactive tailings facilities (closed facilities and those on long-term care and maintenance). The Table of Conformance has been updated accordingly to reflect this change, by adding an additional column to identify items that may potentially be non-applicable to inactive tailings facilities.

Other revisions to the Protocol include:

- Aligning the objective statement with *A Guide to the Management of Tailings Facilities*.
- Re-ordering the indicators so that they follow a more logical flow.
- Placing stronger emphasis on the mandatory use of the Table of Conformance for performance measurement.
- Deleting the self-assessment checklist in Appendix 3, as this is redundant given the role of the Table of Conformance.
- Providing more description of the linkages with other TSM protocols relevant to tailings management.
- Adding to the FAQs to reflect questions that have come up in implementation.

Changes in the March 2023 Version of the *Tailings Management Protocol*

The revisions in this version of the Protocol do not make any substantive changes to the performance indicators or criteria.

The main focus of the revisions is the application of the Protocol to inactive tailings facilities. In particular, this version of the Protocol clarifies that, for inactive tailings facilities, companies may apply a risk-based approach to the frequency of reporting results of performance against the Protocol, and the Protocol describes conditions under which:

- reporting would not be required;
- the frequency of reporting may be reduced; and
- regular frequency of reporting must resume.

These revisions also:

- Provide more description of the broader context of the TSM program as a whole, to help readers better understand where the tailings management component of TSM fits within the broader TSM program.
- Provide definitions of TSM self-assessment, audit, and verification. These definitions are based on definitions applied across TSM, but are tailored to use with the *Tailings Management Protocol* (e.g., making explicit reference to the use of the Table of Conformance).

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Introduction

[Towards Sustainable Mining®](#) [(TSM)](#), launched in 2004, is an initiative designed to enable mining companies to meet society's needs for minerals, metals and energy products in the most socially, economically and environmentally responsible way. TSM includes performance [Protocols](#) and specific, measurable performance indicators for:

- Tailings management
- Water stewardship
- Biodiversity conservation management
- Climate change
- Indigenous and community relationships
- Safety and health
- Crisis management and communications planning
- Preventing child and forced labour

For more information on the TSM program as a whole, please refer to the [TSM 101 Primer](#).

Tailings management is addressed in the tailings management component of TSM. The *Tailings Management Protocol* (the Protocol) describes performance measurement indicators and criteria to measure the quality and comprehensiveness of systems for tailings management. The Protocol is supported by a performance measurement tool referred to as the [Table of Conformance](#).[1]

Implementation of the Protocol and performance measurement are supported by two guidance documents prepared by the [Mining Association of Canada (MAC):](#)

- [*A Guide to the Management of Tailings Facilities* (the Tailings Guide)](#)
  - Introduced in 1998 and revised in 2011, 2017, 2019, and 2021
- [*Developing an Operation, Maintenance, and Surveillance Manual for Tailings and Water Management Facilities* (the OMS Guide)](#)
  - Introduced in 2003 and revised in 2019 and 2021

It is important to emphasize that the Protocol provides a measure of the level of implementation of tailings management practices as part of the TSM initiative. Implemented effectively, responsible tailings management can substantially reduce risk by eliminating some risks and reducing the likelihood and/or potential consequences of those risks that cannot be eliminated. However, applying

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[1] Note that this clicking on this hyperlink will download a copy of the Table of Conformance. It will not open a new page in you Internet browser.

standards such as TSM will not necessarily reduce risk to zero. Responsible tailings management must always consider and work to further reduce remaining risks, adjust to changing conditions, and prepare for the potential tailings facility failures.

Implementing the Protocol, Tailings Guide, and OMS Guide does not replace professional expertise or legal requirements. Companies responsible for tailings facilities should obtain qualified professional advice, including legal, to be sure that each tailings facility's specific conditions are understood and managed throughout the life cycle of the facility, from planning through to post-closure.

Objective

The objective of implementing this Protocol, in accordance with the Tailings Guide and the OMS Guide, is to continually work towards minimizing harm which encompasses both the physical and chemical risks associated with tailings, including:

- zero catastrophic failures of tailings facilities; and
- no significant adverse effects on the environment or human health.

Application

Consistent with other TSM protocols, this Protocol is to be applied during commercial production, which corresponds with the Operations and Ongoing Construction Phase of the tailings life cycle[2], when tailings are transported to and placed in, the tailings facility. However, unlike other TSM protocols, this Protocol is also to be applied to inactive tailings facilities, which are inclusive of:

- tailings facilities in the Closure and Post-Closure Phases of the life cycle; and
- tailings facilities on long-term care and maintenance due to suspension of commercial production.

Note that inactive tailings facilities within the footprint or boundary of operating mines or ore processing facilities are subject to TSM as part of the operating mine or ore processing facility and as such have always been required to apply the Protocol.

For inactive tailings facilities, companies may follow the regular schedule described below under "Reporting of Results" for reporting results of performance against the Protocol. Alternatively, they may apply a risk-based approach to

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[2] Definitions of life cycle phases are provided in the Glossary.

modify the reporting schedule. Appendix 1 describes conditions under which:

- reporting would not be required;
- the frequency of reporting may be reduced relative to the regular reporting schedule described below; and
- regular frequency of reporting must resume.

These conditions apply only to inactive tailings facilities. For active tailings facilities, reporting of results for performance against the Protocol must follow the regular TSM reporting schedule. Similarly, since TSM is applied to the mine site as a whole, as further described below under "Structure and Use of the Protocol", the conditions described in Appendix 1 are not applicable to inactive tailings facilities within the footprint or boundary of operating mines or ore processing facilities.[3]

The intent of this is to allow for a reduction in the administrative burden of reporting performance against the Protocol results for companies with inactive tailings facilities that meet the risk-based conditions described in Appendix 1.

However, it is important to emphasize that companies responsible for inactive tailings facilities are expected to continue to apply appropriate due diligence for responsible tailings management, regardless of the status of TSM reporting. This includes continuing to implement measures described in the Tailings Guide and OMS Guide in a manner commensurate with the characteristics and risk-profile of the tailings facility, including continuing to:

- ensure that the Accountable Executive Officer has accountability for the inactive tailings facility and that roles and responsibilities are assigned;
- implement a tailings management system;
- implement OMS activities;
- periodically updating the risk assessment;
- maintain and test plans for emergency preparedness if potential emergency situations could arise; and
- implement assurance mechanisms such as Independent Review.

Companies may voluntarily apply other TSM protocols to inactive tailings facilities. This is encouraged for other protocols with links to tailings management (see below) but is not mandatory. If the Owner is voluntarily applying other TSM protocols, it is recommended that reporting of performance against these protocols follow the same schedule as reporting for the *Tailings Management Protocol*.

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[3] This assumes that there is at least one active tailings facility within the footprint or boundary of the site.

Performance Indicators

The Protocol describes five performance indicators:

1) Tailings management policy and commitment
2) Assigned accountability for tailings management
3) Tailings management system and emergency preparedness
4) Operation, maintenance, and surveillance (OMS) manual
5) Annual tailings management review

Structure and Use of the Protocol

The main body of the Protocol describes the purpose of each of the indicators and the criteria for the performance rating levels used in TSM: Levels C, B, A, AA, and AAA. The TSM performance rating system is described further in the TSM 101 Primer, and Levels C through AAA are defined across TSM as:

C: No systems are in place. Activities tend to be reactive. Procedures may exist but are not integrated into policies and management systems.
B: Procedures exist but are not fully consistent or documented. Systems and processes are planned and being developed.
A: Good practice. Systems and processes are developed and implemented.
AA: Systems and process are integrated into management decisions and business functions.
AAA: Excellence and leadership.

To obtain a Level A or higher, criteria for Indicators 1, 2, 3, and 5 refer to elements that must be "in conformance with the Tailings Guide", and criteria for Indicator 4 refer to the OMS Guide. A Table of Conformance has been developed and is available for download in Microsoft Excel. This table identifies aspects of the Tailings Guide and the OMS Guide to be implemented to be "in conformance" with the Guides.

> **Please note:**
> - Use of the Table of Conformance is mandatory to assess performance against the five indicators, for self-assessments as well as internal and external audits.
> - For measurement of performance against this version of the Protocol, the 2022 version of the Table of Conformance must be used, together with Version 3.2 of the Tailings Guide and Version 2.1 of the OMS Guide, both released in 2021.

A company would not be in conformance with the Guides if there is:

- an absence of a complete program area (e.g., risk assessment, training processes, independent review); or
- a chronic deficiency of a single program area (e.g., incomplete documentation, such as construction documentation, surveillance requirements frequently missed).

Non-conformances that represent an administrative issue or a non-repetitive finding that does not directly affect safety, environment or quality (e.g., minor gap in training records, irregularity in inspection records, etc.) should not prevent a company from achieving a Level A for a tailings facility for the relevant indicator. Professional judgment must be applied in assessing the significance of identified non-conformances.

While the Table of Conformance provides the key tool for performance measurement, auditors, verifiers, and others involved in performance measurement should refer to relevant sections in the Tailings Guide and the OMS Guide for further information and context regarding items in the Table of Conformance. In addition, in applying professional judgement, those measuring performance may also refer to relevant guidance from other sources.

TSM is applied on a facility-specific basis, meaning it is applied to a mine site as a whole. For mines sites with more than one tailings facility, the performance of those tailings facilities is assessed collectively against the indicators and criteria described in the Protocol. For a mine site as a whole to obtain a specific TSM performance rating level for tailings management (e.g., Level A for Indicator 3), performance of all individual tailings facilities within the mine site must meet that level or higher.

The Protocol includes a glossary of terms used in the Protocol and Appendix 2 provides frequently asked questions. Users should refer to this appendix as a first step in addressing questions they may have about the indicators and use of the Protocol.

Reporting of Results

Performance measurement and reporting against the indicators and criteria in the Protocol is conducted on a three-year cycle.[4] Definitions for TSM self-assessment, audit, and verification for tailings are provided in the Glossary.

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[4] Appendix 1 describes reduced reporting for inactive tailings facilities that meet the criteria described in the Appendix.

The regular reporting schedule over this three-year cycle is:

- conduct a TSM self-assessment (tailings) every year;
- conduct a TSM internal and/or external audit, and an evaluation of effectiveness (if conducted) at least every three years;
- conduct a TSM verification (tailings) at least every three years;
- submit a letter of assurance from the CEO or equivalent at least every three years, in the same year that the TSM verification (tailings) is conducted; and
- report results annually.

In addition, Management Reviews are conducted annually, as per Indicator 5 of the Protocol.

Companies should refer to the industry association under which they are reporting to confirm reporting procedures. For MAC members, please refer to the MAC website for information on submitting TSM data.

Results are publicly reported in a TSM Performance Report prepared by each industry association implementing TSM.

Action Plans

Companies that have not achieved a minimum of a Level A for all five indicators are required to describe in their company profile section of the TSM Performance Report actions that the company intends to take to achieve a Level A for all five indicators.

These action plans should address at a minimum:

- identified gaps in indicators where the company has not achieved a Level A;
- specific actions the company will take to reach a Level A; and
- timeline for implementing actions (note: actions must be implemented within three years).

Organization of Relevant Documentation

The Protocol and Guides refer to a range of documentation that a company must develop and implement to obtain a Level A or higher for each indicator. However, the structure of the Protocol and Guides should not be interpreted as a prescription of how this documentation must be organized. How these documents are organized is at the discretion of the company, taking into account the site-specific circumstances, including the characteristics and life cycle phase of each of tailings facility.

For Indicator 1: A company does not need to develop a stand-alone policy or commitment specific to tailings management. The requirement for a tailings management policy and/or commitments can be met within an overarching company operations or environmental policy, provided that:

- the policy contains specific references to tailings management policies and/or commitments as described in the Tailings Guide; and
- the company can demonstrate that it is adhering to the policy and/or commitments.

For Indicator 3: A tailings management system does not require stand-alone documentation. A tailings management system will likely prove most effective and resilient if incorporated into broader site-wide management systems such as an environmental management system or environmental and social management system. In such cases, the company would need to be able to demonstrate that the tailings management component of the site-wide management system is in conformance with the tailings management system described in the Tailings Guide, as per Indicator 3. There is no requirement that the site-wide management system as a whole be in conformance with the Tailings Guide or be considered in assessing performance against the criteria for this indicator.

Similarly, stand-alone emergency response plan (ERP) and emergency preparedness plan (EPP) documents specific to a tailings facility are not required. An ERP and an EPP may be separate, or they may be combined.[5] There may be a separate ERP and EPP for tailings management, or these may be included in a site-wide ERP and EPP that covers all aspects of the mine site.

For Indicator 5: In cases where the tailings management system is incorporated into a site-wide EMS, there is no requirement that the scope of the annual tailings management review address the full scope of the EMS. For the purpose of this Protocol, only the tailings management component of the EMS needs to be addressed.

For all indicators: Some mine sites (a facility as defined for TSM reporting) have more than one tailings facility. In such cases, there is no need for separate documentation for each tailings facility. Regardless of how the company organizes necessary documentation, it is necessary that the tailings management system, ERP, EPP, and OMS manual specifically address the performance objectives, risk profile, and risk management plan of each tailings

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[5] If the ERP and EPP are combined in a single document, it is important to ensure that the plan provides information that may be used by potentially affected COI, including local authorities (e.g., first responders, municipal governments), and regulatory authorities, to assist in the development of their ERPs for tailings-related emergencies. This is a key characteristic of an EPP that should not be overlooked.

facility. The company needs to be able to demonstrate that it has measures in place that are appropriate to the management of each distinct tailings facility, and in conformance with the Tailings Guide and OMS Guide as per the indicators in the Protocol.

Linkages with Other TSM Protocols

While the *Tailings Management Protocol* focuses on the management of tailings facilities and internal accountability and review mechanisms, there are important components of good practice in tailings management that are addressed in other TSM protocols. These protocols all apply at the facility-level[6] and in some cases also at the corporate-level.

Indigenous and Community Relationships Protocol
The *TSM Indigenous and Community Relationships* protocol is used to measure performance related to engagement with Communities of Interest (COI). It was introduced in 2019 and replaced the *Aboriginal and Community Outreach Protocol*, introduced with the launch of *TSM* in 2004. This protocol has five performance indicators:

- Community of Interest (COI) identification
- Effective COI engagement and dialogue
- Effective Indigenous engagement and dialogue
- Community impact and benefit management
- COI response mechanism

COI engagement should address risks associated with tailings management, and how those risks are managed. It should also include mechanisms to seek input from communities to inform the Project Conception and Planning and Design Phases of the life cycle, and assessment of risks. Specific topics for engagement should be determined through dialogue with COI.

Climate Change Protocol
The *TSM Climate Change Protocol* was introduced in 2021 to facilitate continual performance improvement related to the management of climate-related risks and opportunities, including climate change adaptation. One of the performance indicators is focused on facility-level climate change management, and performance criteria include establishing a process for the management of the physical climate impacts and adaptation.

Consideration of potential impacts of climate change as part of risk assessments

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[6] Facility in this context means the mine site as a whole, including, but not limited to, any tailings facility on the site.

for tailings facilities is also identified in the Table of Conformance for Indicator 3 of the *Tailings Management Protoco*l. MAC's 2021 *Guide on Climate Change Adaptation for the Mining Sector* can be used to consider climate related risks and opportunities and incorporate climate change adaptation into decision-making, including tailings management.

Water Stewardship Protocol
This protocol was introduced in 2019 with the goal of driving continual improvement in performance related to water management, and has four performance indicators:

- Water governance
- Operational water management, including establishing and updating a site-wide water balance, and establishing a water monitoring program
- Watershed-scale planning
- Water performance and reporting

Given the close links between tailings management and water management, it is essential that tailings management be considered in the implementation of this protocol.

Crisis Management and Communications Planning Protocol
A crisis is a sudden event or set of circumstances that could significantly affect a company's ability to carry out its business. It could represent a threat to the environment or to the health and safety of employees, neighbouring communities, or the public at large. The protocol describes criteria for companies to:

- Plan to manage a crisis and to communicate effectively with employees, authorities, and the community during crisis response.
- Review the plan on a regular basis to make sure that it responds to company needs, properly reflects risks, and incorporates best practices.
- Train employees to manage a crisis through annual crisis simulation exercises.

Since an emergency related to a tailings facility could present a crisis, this protocol is linked to emergency response planning (Indicator 3 of the *Tailings Management Protocol*).

Indicator 1: Tailings Management Policy and Commitment

Purpose

To confirm that companies have established and effectively communicated a policy and/or commitments that express intention, commitments and principles in relation to tailings management.

Tailings Management Policy and Commitment: Assessment Criteria

Level	Criteria
C	The company has not met all Level B criteria.
B	The company has developed a policy and/or commitments that specifically address tailings management, but has not met all requirements for a Level A. The company has developed an action plan to meet all requirements for a Level A.
A	Using the Table of Conformance (2022 version), an internal audit has been conducted and determined that: • The policy and/or commitments are: ○ in conformance with Version 3.2 of the Tailings Guide; ○ approved by senior management; and ○ endorsed at the governance level. • The company has a process in place to ensure that the policy and/or commitments are: ○ communicated to employees; ○ understood to a degree appropriate to their roles and responsibilities by employees, contractors, and consultants whose activities may affect tailings management either directly or indirectly; and ○ implemented with budget allocation.
AA	Using the Table of Conformance (2022 version), an external audit has been conducted and determined that all requirements for a Level A have been met.
AAA	The external audit for Level AA included an evaluation of the effectiveness of the policy and/or commitments and their implementation.

Tailings Management Policy and Commitment: Frequently Asked Questions (Appendix 2)

#	FAQ
1	Can a company effectively implement a tailings management system without having a tailings management policy in place?
2	How can governance level endorsement of the tailings management policy or commitment be demonstrated?
3	What are some examples of employees or contractors whose activities may affect tailings management either directly or indirectly?
4	Can external contractors be used to conduct an internal audit?
5	Can a company skip an internal audit and go straight to an external audit for Level AA?
6	How long are audits valid?

Indicator 2: Assigned Accountability and Responsibility for Tailings Management

Purpose

To confirm that accountability for tailings management is assigned to an Accountable Executive Officer (e.g., CEO, COO, or Vice President), and that an appropriate management structure and resources are in place to provide assurance to the company that tailings are managed responsibly.

Assigned Accountability and Responsibility for Tailings Management: Assessment Criteria

Level	Criteria
C	The company has not met all Level B criteria.
B	The company has defined and documented accountability and responsibility for tailings management, but all requirements for a Level A have not been met. The company has developed an action plan to meet all requirements for a Level A.
A	Using the Table of Conformance (2022 version), an internal audit has been conducted and determined that: • accountability for tailings management has been assigned by the Board or Governance Level to an Accountable Executive Officer; • the Accountable Executive Officer has a direct reporting relationship to the Board, a Board committee, or the Governance Level; • responsibility and authority for tailings management have been delegated in writing to qualified personnel; and • delegation of responsibility and authority for tailings management is in conformance with Version 3.2 of the Tailings Guide.
AA	Using the Table of Conformance (2022 version), an external audit has been conducted and determined that all requirements for a Level A have been met.
AAA	The external audit for Level AA included an evaluation of the effectiveness of the: • assignment of accountability for tailings management to the Accountable Executive Officer; and • delegation of responsibility and authority for tailings management.

Assigned Accountability and Responsibility for Tailings Management: Frequently Asked Questions (Appendix 2)

#	FAQ
4	Can external contractors be used to conduct an internal audit?
5	Can a company skip an internal audit and go straight to an external audit for Level AA?
6	How long are audits valid?
7	How can a company demonstrate whether personnel are qualified?
8	What are examples of actions that should be the responsibility of the Accountable Executive Officer to demonstrate accountability for tailings management?

Indicator 3: Tailings Management System and Emergency Preparedness

Purpose

To confirm that companies have:

- developed and implemented a tailings management system in conformance with the tailings management framework described in the Tailings Guide; and
- developed and tested emergency response plans (ERPs) and emergency preparedness plans (EPPs) in conformance with the Tailings Guide.

Tailings Management System and Emergency Preparedness: Assessment Criteria

Level	Criteria
C	The company has not met all Level B criteria.
B	The company has: - developed and implemented a tailings management system, but that system is not in conformance with Version 3.2 of the Tailings Guide; or - conducted a gap analysis comparing existing tailings management practices against the Tailings Guide and determined that existing practices for the tailings facility are not in conformance with Version 3.2 of the Tailings Guide. And the company has: - developed an ERP and an EPP for the tailings facility but both are not in conformance with Version 3.2 of the Tailings Guide; or - developed an ERP and an EPP for the tailings facility which are in conformance with Version 3.2 of the Tailings Guide, but both have not been tested. The company has developed an action plan to meet all requirements for a Level A.
A	Using the Table of Conformance (2022 version), an internal audit has been conducted and determined that the company has: - developed and implemented a tailings management system that is in conformance with Version 3.2 of the Tailings Guide; - developed an ERP and an EPP for the tailings facility that are both in conformance with the Version 3.2 of Tailings Guide; and - tested both the ERP and the EPP.
AA	Using the Table of Conformance (2022 version), an external audit has been conducted and determined that all requirements for a Level A have been met.

AAA	The external audit for Level AA included an evaluation of the effectiveness of the:
	• development and implementation of the tailings management system; and
	• development and testing of the ERP and the EPP.

Tailings Management System and Emergency Preparedness: Frequently Asked Questions (Appendix 2)

#	FAQ
1	Can a company effectively implement a tailings management system without having a tailings management policy and/or commitments in place?
4	Can external contractors be used to conduct an internal audit?
5	Can a company skip an internal audit and go straight to an external audit for Level AA?
6	How long are audits valid?
9	How can emergency response plans (ERPs) and emergency preparedness plans (EPPs) be tested?

Indicator 4: OMS Manual

Purpose

To confirm that the company has developed and implemented a tailings facility-specific OMS manual in conformance with the OMS Guide to facilitate implementation of the tailings management system (Indicator 3).

OMS Manual: Assessment Criteria

Level	Criteria
C	The company has not met all Level B criteria.
B	An OMS manual has been developed for the tailings facility but it is not in conformance with Version 2.1 of the OMS Guide. The company has developed an action plan to meet all requirements for a Level A.
A	Using the Table of Conformance (2022 version), an internal audit has been conducted and determined that an OMS manual has been developed and implemented for the tailings facility that is in conformance with Version 2.1 of the OMS Guide.
AA	Using the Table of Conformance (2022 version), an external audit has been conducted and determined that an OMS manual has been developed and implemented for the tailings facility that is in conformance with Version 2.1 of the OMS Guide.
AAA	The external audit for Level AA included an evaluation of the effectiveness of the development and implementation of the OMS manual.

OMS Manual: Frequently Asked Questions (Appendix 2)

#	FAQ
4	Can external contractors be used to conduct an internal audit?
5	Can a company skip an internal audit and go straight to an external audit for Level AA?
6	How long are audits valid?
10	Does an operation, maintenance, and surveillance (OMS) manual need to be a single document?

Indicator 5: Annual Tailings Management Review

Purpose

To confirm that there is an annual review of tailings management that is reported to the Accountable Executive Officer to ensure corporate governance over tailings management and to ensure that the company is satisfied that the tailings management organizational structures and systems are effective and continue to meet the needs of the organization.

Annual Tailings Management Review: Assessment Criteria

Level	Criteria
C	The company has not met all Level B criteria.
B	The company has conducted periodic, documented reviews of tailings management for the tailings facility, but all requirements for a Level A have not been met. The company has developed an action plan to meet all requirements for a Level A.
A	Using the Table of Conformance (2022 version), an internal audit has been conducted and determined that the company conducts reviews of tailings management for the tailings facility: • on an annual basis; and • in conformance with Version 3.2 of the Tailings Guide.
AA	Using the Table of Conformance (2022 version), an external audit has been conducted and determined that all requirements for a Level A have been met.
AAA	The external audit for Level AA included an evaluation of the effectiveness of the annual tailings management reviews.

Annual Tailings Management Review: Frequently Asked Questions (Appendix 2)

#	FAQ
4	Can external contractors be used to conduct an internal audit?
5	Can a company skip an internal audit and go straight to an external audit for Level AA?
6	How long are audits valid?

Glossary

Accountability: The answerability of an individual for their own performance and that of any personnel they direct, and for the completion of specified deliverables or tasks in accordance with defined expectations. An accountable person may delegate responsibility for completion of the deliverable or task, but not the accountability.

Accountable Executive Officer: An executive-level person (e.g., CEO, COO, Vice President) designated by the Board of Directors or Governance Level, who is accountable for tailings management, and the development and implementation of the systems needed for responsible tailings management. This accountability cannot be delegated. This Officer has a direct reporting relationship to the Board, a Board committee, or the Governance level and:
- needs to be aware of key outcomes of tailings facility risk assessments and how these risks are being managed;
- has accountability and responsibility for putting in place an appropriate management structure;
- delegates responsibility and authority for tailings management and defines the personnel responsibilities, authority, and reporting relationships to implement the systems needed for responsible tailings management through all phases in the tailings facility life cycle; and
- demonstrates to the Board of Directors/Governance level whether tailings are managed responsibly.

Audit: An audit is a formal, systematic and documented examination of a tailings facility's conformance with explicit, agreed, prescribed criteria, often requirements stipulated in law or in the company's tailings management system. Audits evaluate and report on the degree of conformance with stipulated criteria, based on the systematic collection and documentation of relevant evidence. Audits involve some degree of judgment but are not designed to determine root cause of deficiencies, or to evaluate management system effectiveness.

Internal audits are conducted by employees of the company with appropriate knowledge and competencies who are independent, impartial, and objective with respect to the management of the tailings facility being audited. For example, they could work at other tailings facilities in the corporate portfolio or that could work at the corporate level.

External audits are conducted by auditors who are external to the company being audited. Auditors maintain an objective viewpoint throughout the audit process to ensure that findings and conclusions are based only on the evidence. (Adapted from ISO 19011).

Authority: The power to make decisions, assign responsibilities, or delegate some or all authority, as appropriate. The ability to act on behalf of the Owner.

Closure Phase: Life cycle phase that begins when placement of tailings into the tailings facility ceases permanently. The facility and associated infrastructure are decommissioned, and the closure plan is implemented, including:

- transitioning for operations to permanent closure;
- removal of infrastructure such as pipelines;
- changes to water management or treatment; and
- recontouring or revegetation of tailings and any containment structures or other structural elements.

Communities of Interest (COI): COI include all individuals and groups who have an interest in, or believe they may be affected by, decisions respecting the management of operations. Facility COI may include, but are not restricted to:
- Indigenous peoples
- Community members
- Under-represented groups
- Employees
- Contractors/suppliers
- Neighbours
- Local environmental organizations and other non-governmental organizations (NGO)
- Local governments and institutions

Other COI may include:
- Suppliers
- Customers
- Regional or national environmental organizations and other non-governmental organizations (NGO)
- Governments
- The financial community
- Shareholders

Company: The Tailings Guide uses the term "Owner" rather than "company." The definition of "company" for the purpose of this Protocol is the same as "Owner" as defined in the Tailings Guide: Owner is the company, partnership, or individual who has legal possession or is the legal holder of a tailings facility under law in the applicable jurisdiction where the facility is located. For example, the company, partnership or individual that owns the mine or ore processing facility from which tailings and water are generated is the owner of those tailings and can be considered the Owner of the tailings facility.

In the case of joint ventures or similar projects, they may be more than one company involved in Ownership. In such cases, the Owner would comprise all companies that are represented on the Board of Directors and are involved in decision-making.

Continual improvement: The process of implementing incremental improvements and standardization to achieve better environmental and management system performance.

Emergency: A situation that poses an impending or immediate risk to health, life, property, the environment and which requires urgent intervention to prevent or limit the expected adverse outcomes.

Evaluation of effectiveness: An evaluation of effectiveness goes beyond determining whether a condition has been met and includes an assessment of whether tailings management is achieving the intended results. It considers both the extent to which planned activities have been realized, and the extent to which performance objectives and indicators have been achieved.

Criteria to be examined will depend on the scope of the evaluation. Typical sources of information that should be considered when evaluating tailings management effectiveness include changes in internal or external conditions that could affect tailings management and achievement of performance objectives.

Performance results and trends that should be evaluated to determine the effectiveness of tailings management include:
- the extent to which performance objectives and indicators have been achieved;
- the extent to which planned activities have been implemented as intended;
- fulfilment of conformance obligations;
- non-conformities and corrective actions;
- surveillance results;
- adequacy of resources to support achievement of performance objectives;
- feedback from practitioners and end users; and
- any additional relevant information or feedback from COI.

Governance level: The company Board of Directors (or a sub-committee of the Board of Directors) is considered the governance level of a company, the level at which the highest-level corporate decisions are made, particularly regarding organizational and financial resources. For companies headquartered outside of the country in which the tailings facility is located that do not have a Board of Directors based in that country, the governance level would be equivalent to the highest-level committee or board that provides oversight and review of tailings management activities within that country.

Long-Term Care and Maintenance: Life cycle phase during which the mine has ceased commercial operations and the placement of tailings into the tailings facility is not occurring. The Owner expects to resume commercial operations at some point in the future, so surveillance and monitoring of the tailings facility continue, but the facility and associated infrastructure are not decommissioned and the closure plan is not implemented.

Maintenance: Includes preventative, predictive, and corrective activities carried out to provide continued proper operation of all infrastructure (e.g., civil, mechanical, electrical, instrumentation, etc.), or to adjust infrastructure to ensure operation in conformance with performance objectives.

Management system: Processes and procedures that collectively provide a systematic framework for ensuring that tasks are performed correctly, consistently and effectively to achieve a specified outcome and to drive continual improvement in performance. A systems approach to management requires an assessment of what needs to be done, planning to achieve the objective, implementation of the plan, and review of performance in meeting the set objective. A management system also considers necessary personnel, resources and documentation requirements. Other definitions associated with management systems are:

> **Policy:** The expression of management's commitment to a particular issue area that presents the stance of the company to interested external parties.
> **Practice:** Documented approaches to carrying out a task.
> **Procedure:** A documented description of how a task is to be carried out.

Operation: Includes activities related to the transport, placement, and permanent storage of tailings and, where applicable, process water, effluents and residues, and the recycling of process water. The term "operation" applies throughout all phases of the life cycle of a tailings facility and is not limited to the operations and ongoing construction phase of the life cycle when tailings are being actively placed in the facility. As a result, operation also includes reclamation and related activities.

Operations and Ongoing Construction: Life cycle phase during which tailings are transported to and placed in, the tailings facility. Tailings dams may be raised, or new tailings cells added as per the design. The operations and ongoing construction phase of a tailings facility typically coincides with the period of commercial operations of the mine.

Post-Closure Phase: Life cycle phase that begins when decommissioning work is complete, the closure plan has been implemented, and the tailings facility has transitioned to long-term maintenance and surveillance. During post-closure,

responsibility for a tailings facility could transfer from the Owner to jurisdictional control.

Responsibility: The duty or obligation of an individual or organization to perform an assigned duty or task in accordance with defined expectations, and which has a consequence if expectations are not met. An individual or organization with responsibility is accountable to the person that delegated that responsibility to them.

Surveillance: includes the inspection and monitoring (i.e., collection of qualitative and quantitative observations and data) of activities and infrastructure related to tailings management. Surveillance also includes the timely documentation, analysis, and communication of surveillance results, to inform decision making and verify whether performance objectives and risk management objectives, including critical controls, are being met.
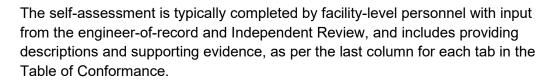
Tailings facility: The collective engineered structures, components and equipment involved in the management of tailings solids, other mine waste managed with tailings (e.g., waste rock, water treatment residues), and any water managed in tailings facilities, including pore fluid, any pond(s), and surface water and runoff. This may include structures, components and equipment for:
- classification of tailings through water content management (e.g., cyclones, thickeners, filter presses);
- transporting tailings to the tailings facility (e.g., pipelines, flumes, conveyors, trucks);
- containment of tailings and associated water (e.g., dams, dykes, stacks, liner systems, cover systems);
- management of seepage (e.g., underdrains, collection ponds, pumping wells);
- water reclaim systems (e.g., pumping to the ore processing facility); management of surface water releases from the tailings facility (e.g., diversions, decant structures, spillways, outlets, flumes, water treatment);
- structures, components and equipment for the surveillance and maintenance of tailings facilities; and
- mechanical and electrical controls, and power supply associated with the above.

Note: the following definitions are based on definitions applied across TSM, but tailored to use with the *Tailings Management Protocol*.

TSM self-assessment (tailings): Facilities annually self-assess their performance against the indicators in the *Tailings Management Protocol*. This entails completing the Table of Conformance in the first year of applying TSM, and reviewing and, as appropriate, updating the Table of Conformance in

subsequent years. Self-assessment includes determining a provisional TSM rating (i.e., C, B, A, AA, or AAA)[7] for each indicator, recognizing that for Level A or higher, a self-assessment is not sufficient to determine the TSM rating beyond a Level B.

The self-assessment is typically completed by facility-level personnel with input from the engineer-of-record and Independent Review, and includes providing descriptions and supporting evidence, as per the last column for each tab in the Table of Conformance.

TSM audit (tailings): In the TSM audit process for the *Tailings Management Protocol*, the most recent version of the Table of Conformance and supporting evidence are reviewed to assess whether the Level A criteria for each indicator in the Protocol have been met. This should include assessing plans, processes, and systems developed and implemented in accordance with the Tailings Guide and the OMS Guide (see also the broader definition of audit).

Internal audits to assess for Level A are conducted by employees with appropriate knowledge and competencies who are independent, impartial, and objective with respect to the management of the tailings facility being audited. External audits to assess for Level AA are conducted by auditors who are external to the company being audited.

TSM verification (tailings): In the verification process, verifiers review the most recent self-assessment including any audit (and evaluation of effectiveness, if conducted) to determine whether or not the self-assessment/audit process was complete and appropriate and whether there is adequate evidence to support the TSM rating reporting for each indicator in the *Tailings Management Protocol*.

TSM verifications are conducted by trained Verification Service Providers and are conducted in accordance with the *TSM Verification Guide* and the *Terms of Reference for Verifiers*.

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[7] See the TSM 101 Primer for more information on the TSM rating system.

Appendix 1: Conditions under which Frequency of TSM Reporting may be Reduced for Inactive Tailings Facilities

As described in the Introduction, the Protocol is to be applied to inactive tailings facilities which are inclusive of:

- tailings facilities in the Closure and Post-Closure Phases of the life cycle; and
- tailings facilities on long-term care and maintenance due to suspension of commercial production.

For inactive tailings facilities, companies may follow the regular schedule described in the Introduction under "Reporting of Results" for reporting results of performance against the Protocol. Alternatively, they may apply a risk-based approach to modify the reporting schedule. Conditions are described below under which:

- reporting would not be required;
- the frequency of reporting may be reduced relative to the reporting described in the Introduction – Reporting of Results; and
- regular frequency of reporting must resume.

Conditions under which reporting would not be required

Owners of inactive tailings facilities would not be required to report results of performance against the Protocol if all of the following conditions are met:

- The potential consequences of a credible physical failure of the tailings facility are not predicted to include loss of human life.
- The potential consequences of a credible physical failure of the tailings facility are not predicted to include the following, or a risk assessment has concluded that the likelihood of the following consequences is extremely low:
  - significant loss or deterioration of habitat; and
  - significant disruption of business[8], service, or social dislocation.
- The potential consequences associated with chemical risks posed by the tailings facility are not predicted to include the following, or a risk assessment has concluded that the likelihood of the following consequences is extremely low:
  - impacts on downstream drinking water supplies;
  - significant loss or deterioration of habitat; and
  - significant disruption of business, service, or social dislocation.

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[8] This refers to disruption of business activities unrelated to the mine such as other nearby businesses or commercial activities.

If these conditions are no longer met (e.g., because consequence classification has changed due to increases in downstream population), then the Owner is required to resume reporting. Reporting would be on the regular schedule, unless the conditions below for reducing reporting frequency are met.

The Owner of an inactive tailings facility that meets these conditions is required to identify the inactive tailings facility in their annual TSM reporting and state that reporting is not required for that facility. The Owner may submit a brief summary of activities conducted to ensure ongoing responsible management of the tailings facility (e.g., when last Independent Review was conducted, when last test of emergency plans was conducted).

Conditions for reducing reporting frequency

If the conditions described above under which reporting would not be required are not met, then the frequency of reporting of performance against the Protocol may be reduced[9] for inactive tailings facilities if:

- the potential consequences of a physical failure are not predicted to include human loss of life; and
- the consequence classification is low, significant, or high.[10]

Frequency of reporting cannot be reduced for tailings facilities with consequence classifications that are very high or extreme.

Reduced frequency of reporting would be as follows:

- conduct a TSM self-assessment at least every three years;
- conduct an internal audit, external audit, and/or evaluation of effectiveness at least every six years;
- conduct a TSM verification at least every six years;
- submit a letter of assurance from the company's CEO or equivalent at least every six years, in the same year that the TSM verification (tailings) is conducted; and
- report results at least every three years.

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[9] Reduced relative the regular frequency described in the Introduction – Reporting of Results.

[10] Consequence classification to be determined by the company, with input from the Engineer of Record and Independent Review. The company should use an established consequence classification scheme relevant to the jurisdiction in which the tailings facility is located, such as those from the Canadian Dam Association, the International Commission on Large Dams, or the *Global Industry Standard on Tailings Management*.

In addition, Management Reviews (Indicator 5) are required at least every three years.

If the above conditions are no longer met, then the Owner is required to resume reporting on the regular schedule as described in the Introduction – Reporting of Results.

An example of the regular and reduced frequencies of reporting performance against the Protocol for inactive tailings facilities is illustrated below.

Performance measurement activity	Regular Frequency			Reduced Frequency					
	Year			Year					
	1	2	3[11]	1	2	3	4	5	6[10]
TSM self assessment	■	■	■			■			■
TSM internal and/or external audit, and evaluation of effectiveness (if conducted)(Level A, AA, or AAA respectively)			■						■
TSM verification			■						■
Letter of assurance from CEO or equivalent			■						■
TSM reporting	■	■	■			■			■

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[11] Note that these activities do not all need to be conducted in the same year. For example, an internal or external audit may be conducted the year before the verification is conducted. The table is intended to be an example only, to help illustrate the difference between regular and reduced frequency.

Appendix 2: Frequently Asked Questions

1. **Can a company effectively implement a tailings management system without having a tailings management policy and/or commitments in place?**
    No. There is a direct link between Indicators 1 and 3 of the Protocol. A company must have a tailings management policy and/or commitments in place in order to effectively implement a tailings management system, since the policy is part of the management system. A company cannot achieve a Level A for Indicator 3 (Tailings Management System) if it has not achieved a Level A or higher for Indicator 1 (Tailings Management Policy).

2. **How can governance level endorsement of the tailings management policy or commitment be demonstrated?**
    Endorsement of the tailings management policy and/or commitments at the governance level will vary from company to company. For example, a Board resolution adopting the policy will be appropriate for some companies, while others will fulfill this requirement through a presentation on the tailings management policy to a sub-committee of the Board of Directors.

3. **What are some examples of employees or contractors whose activities may affect tailings management either directly or indirectly?**
    Examples of personnel whose activities may directly affect tailings management include mill managers, tailings pipeline inspectors, and employees undertaking any operation, maintenance, or surveillance activities. An example of personnel whose activities may indirectly affect tailings management is procurement personnel who order parts or services related to tailings management.

4. **Can external contractors be used to conduct an internal audit?**
    As stated in the Glossary, internal audits should be conducted by employees with appropriate knowledge and competencies who are independent, impartial, and objective with respect to the management of the tailings facility being audited. For example, they could work at other tailings facilities in the Owner's portfolio or could work at the corporate level.

    This means that the company must take a role in conducting an internal audit, and to the extent possible, the internal audit should be conducted by employees of the company.

    However, some companies may not have the capacity to conduct an internal audit as described above. In such cases, the company may hire an external consultant to support the conduct of the internal audit. However, someone from the corporate office, such as the Accountable Executive Officer, needs

to be directly involved in the conduct of the audit. In the case of companies with more than one tailings facility, someone involved in the management of one of the other tailings facilities should also be involved.

An important distinction between and internal and an external audit is that, while external personnel may be involved in the conduct of an internal audit, and internal audit is conducted following a process/procedures establishing by the company.

5. **Can a company skip an internal audit and go straight to an external audit for Level AA?**
No. Internal and external audits both have an important role to play, and may focus on different aspects, or at different levels of detail. For new members or new tailings facilities, an internal audit should be done first, to achieve a Level A, before conducting an external audit with the goal of achieving a Level AA. Once a Level AA or AAA has been achieved, an internal audit is not required for subsequent TSM reporting cycles, although the ongoing conduct of internal audits is encouraged.

6. **How long are audits valid?**
Internal and external audits remain valid up to a maximum of three years or six years from inactive tailings facilities meeting the conditions described in Appendix 1. In addition, detailed assessments of conformance with the Table of Conformance remain valid until there is a material change in tailings management.

7. **How can a company demonstrate whether personnel are qualified?**
Considerations for determining whether a person is qualified include, but are not limited to:
- previous training, including as appropriate formal education
- previous experience in performing the task/activity
- degree of relevant knowledge
- regulatory, professional, or industry- definitions of "qualified"

8. **What are examples of actions that should be the responsibility of the Accountable Executive Officer to demonstrate accountability for tailings management?**
Examples of actions the Accountable Executive Officer can take to demonstrate accountability for tailings management could include:
- ensuring that the senior management team and/or Board or governance level are appropriately informed on tailings management issues;
- reviewing risk assessment results;
- participating in tailings reviews;
- reviewing and approving adequate resources for tailings management;
- participating in independent tailings review meetings; and

- participating in crisis management planning simulation exercises.

9. **How can emergency response plans (ERPs) and emergency preparedness plans (EPPs) be tested?**
As described in Section 5.2.3 of the Tailings Guide, ERPs and EPPs can be tested in a range of ways, from a tabletop exercise to a full-scale simulation of an emergency and can include multiple failures. Testing may focus on specific components, such as the mechanisms to alert potentially affected parties (e.g., alarm systems for evacuation). Testing may also focus on broader systems, such as a field simulation of a coordinated response to a specific emergency scenario.

In the case of EPPs, which have an external focus, rather than the primarily internal focus of an ERP, testing needs to involve external parties (e.g., first responders, local governments) who would have a role to play in emergency response, and examples of activities to test the EPP or components of this plan include:
- Simulations to test the command structure involving the company and external parties;
- Testing of communications systems between parties (e.g., to ensure hardware and software compatibility);
- Testing of notification procedures to be followed if an emergency occurs or is imminent;
- Testing procedures to restrict access to critical infrastructure (e.g., closure of downstream bridges by police or other parties); and
- Simulations of multi-party response to an emergency scenario, testing aspects of the company's ERP as well as ERPs developed by external parties.

10. **Does an operation, maintenance, and surveillance (OMS) manual need to be a single document?**
No. It is up to the company to determine how best to organize information on OMS activities to ensure that the documentation is complete and easy to use. There may be a single document, or there may be multiple modules as described in Section 2.4 of the OMS Guide. An OMS manual may refer to or include hyperlinks (in the case of electronic documents) to other relevant documents such as standard operating procedures developed by the company and manuals provided by equipment manufacturers that describe specific procedures (e.g., instrument calibration).