Global Tailings Review: Draft Global Tailings Standard - SME Membership Review and Comment

20 December 2019

GENERAL COMMENTARY AND IDENTIFICATION OF POTENTIAL ADDITIONS TO THE STANDARD

Proposed Addition / Comment	Rationale
Overall the document is very well done and comprehensive. One key aspect that is not addressed is that any successful operation requires personnel with the appropriate education, training, experience, professionalism, honesty, integrity and moral and ethical values to make it successful.	
The Global Tailings co-conveners will develop a standardized approach for self-governance and auditing. This approach may be similar to the CN Code (https://www.cyanidecode.org/), with signatories committing to follow the standards. Appropriate aspects or approaches of ISO 9000 or 14000 will be considered.	Need to develop a audit program, similar to the CN Code, to verify that the recommended standards are being properly applied, and to develop some level of consistency between operators. The standards call for "qualified" personnel, but fail to define what qualified is, or what the minimum qualifications are.
Signature organizations will contribute to university and industry training programs to increase the supply of qualified individuals.	Companies need to recognize that will likely be a shortage of qualified engineers to meet this standard.
Requirement xx.x Develop a consistent and understandable risk-informed approach to designing, operating and closing tailings facilities. Work with State authorities to adopt or modify regulation to accommodate risk approaches.	Owners and design engineers need to utilize risk-informed decision making processes as a fundamental way to guide design, operation, and closure. This approach takes into account the natural variability of systems and loading conditions, unknowns, resiliency and redundancy, ability to monitor, past performance, and potential impacts.
Alternatives to wet or hydraulic deposition of tailings on the land surface should be considered in the initial planning.	Alternative methods of disposal may reduce the risk of tailings dam failures.
Check focus and wording of document to include non-failure impacts of TSF	Readers may focus on just the analysis and evaluation of TSF structural failure at the expense of other more common TSF impacts, such as leaks, solution spills, groundwater contamination, etc.
Understandably, the main concern of TSF safety is catastrophic failure. However, the standard we are reviewing states in the forward that tailings are complex systems, so the standard has been written to address the range of impacts that could be generated by a TSF during its construction, operation and closure. The Standard, as written, is overly focused on monitoring for failure as opposed to monitoring for potential impacts, including failure, e.g. - Requirement 13.1 should emphasize that personnel education should cover TSF management, not just TSF failure. - Principle 8 (Design, implement and operate monitoring systems) is good, but requirement 8.1 focuses on monitoring for failure as opposed to impacts.	
This document, at some level, should be supportive of the third-party/ITRB review process. Does it make sense to establish verbiage that supports taking action concerning provided third party recommendations? Most companies certainly at following through with ITRB commentary. However, there may be situations where an operator may choose not to follow the recommendations, and the benefit of the review was lost. Does it make sense to provide some high-level support to the review process and responding to review commentary within this document?	
It is generally acknowledged the industry has a limited number of suitably qualified professionals to fulfill the obligations outlined in the Standard. The GTR should acknowledge this limitation and encourage the mining industry (through the ICMM?) to place an emphasis on training and development of professionals to ensure the Standard can be implemented as intended.	

FOREWORD

Page #	Reference	Draft Standard Wording	Comment, Question or Proposed Alternate Wording	Rationale for the change
ii	Last sentence	Ultimately, Operators are required to strive towards zero harm to people and the environment-with zero tolerance for any human fatality. The mining industry is encouraged to invest in new technologies and safer mining methods to achieve this goal.	We already largely have the technology and what we need is the responsible professionals to be sure it is implemented properly.	If the industry is truly committed to this, the “External loading criteria required by the Standard” shown in Table 2, should be revised to reflect zero tolerance for the loss of human life by requiring use of the PMF and MCE for the High and Very High classifications, as well as, the Extreme classification. Put bluntly, it is OK to kill less than 100 people but not More Than 100 people. Or significantly disrupt the lives of 500 to 1,000 people or 1,000 to 5,000 people but not over 5,000 people. Best to remove the table as it is a design criteria that does not fit in a governance document.

THE GLOBAL TAILINGS STANDARD

Page #	Reference	Draft Standard Wording	Comment, Question or Proposed Alternate Wording	Rationale for the change
1	Introduction 1st Paragraph	The Global Tailings Standard (the 'Standard') aims to achieve the safe and secure management of mine tailings facilities globally. The Standard compels Operators1 to use specified measures to prevent the catastrophic failure of tailings facilities and to implement best practices2 in the planning, design, construction, operation, maintenance, monitoring, and closure of tailings facilities.	The Global Tailings Standard (the 'Standard') aims to achieve the safe and secure management of mine tailings facilities globally. The Standard compels Operators(1) to use specified measures to avert the catastrophic failure of tailings facilities and to implement best practices(2) in the planning, design, construction, operation, maintenance, monitoring, and closure of tailings facilities.	Consistency with other discussion in document concerning the ability of the Standard to prevent catastrophic failure.
1	Introduction 2nd Paragraph	The Standard makes clear that extreme consequences to people and the environment from catastrophic tailings facility failures are unacceptable. Operators must have zero tolerance for human fatalities and must strive for 'zero harm' to people and the environment from the inception of project planning. Operators are also expected to innovate and apply new technologies and mining methods that reduce risks and minimize consequences should problems arise.	The Standard makes clear that extreme consequences to people and the environment from catastrophic tailings facility failures are unacceptable. Operators must commit to zero tolerance for human fatalities and must strive for 'zero harm' to people and the environment from the inception of project planning. Operators are also expected to innovate and apply new technologies and mining methods that reduce risks and minimize consequences should problems arise.	Consistent with other recommended changes to wording for Topic 3, citing phases like "must have" are recommended for revision.
1	2nd paragraph, last sentence	Operators are also expected to innovate and apply new technologies and mining methods that reduce risks and minimize consequences should problems arise.	Operators are also expected to innovate and apply new technologies and mining methods that reduce probability of failure and minimize consequences should problems arise.	Risk = probability x consequence
1	Introduction 3rd Paragraph	Once a tailings facility moves from concept to reality, it becomes a hazard that must be managed to minimize risk. The Standard anticipates that individuals in the highest positions of authority within the organizational hierarchy will be accountable for the Operator's decisions and will insist on actions that reduce the risk of tailings facility failure to the fullest extent possible. In addition, the Standard expects Operators to adopt best management practices and to apply rigorous technical controls. Zero harm is the goal at all stages of a tailings facility lifecycle.	Once a tailings facility moves from concept to reality, it becomes a potent hazard that must be managed to ~~minimize~~ reduce the risk to an appropriate level. The Standard anticipates that individuals in the highest positions of authority within the organizational hierarchy will be accountable for the Operator's decisions and will insist on actions that reduce the risk of tailings facility failure. In addition, the Standard expects Operators to adopt best management practices and to apply rigorous technical controls. Zero harm is the goal at all stages of a tailings facility lifecycle.	Consistent with other recommended changes to wording for Topic 3, the phrase "to the fullest extent possible" is recommended for revision. See the comment with respect to "minimize" below.
1	3rd paragraph	Once a tailings facility moves from concept to reality, it becomes a hazard that must be managed to minimize risk.	A better word here, and in appropriate other places throughout the Standard, is to "control risk" rather than "minimize risk" to be in line with the goal of "Zero harm is the goal at all stages of a tailings facility life cycle".	
1	Overview of the Standard	Topic Area 1 requires Operators to develop knowledge about the social, economic and environmental context of a proposed or existing tailings facility, and to conduct a detailed site characterization .	Topic Area 1 requires Operators to develop knowledge about the social, economic and environmental context of a proposed or existing tailings facility, and to conduct a detailed characterization of the site and the tailings.	Clarify that the characterization process is more than an evaluation of the physical setting but should also include geotechnical and geochemical characterization of the tailings that will be placed in the TSF over the life of the facility. This is specifically addressed in requirement 1.2.
1	Footnote 2	The Standard recognizes that there is no one "best practice" that can be viewed as applying to every tailing facility. Instead, there are a range of "best practices" that can apply to safely manage tailing facilities.	Delete footnote and include wording in the definition of "best practice".	The qualification wording applies to each instance of the use of the term "best practice".
2	Overview of the Standard 4th Paragraph	Topic Area 3 aims to lift the performance bar for designing, constructing, operating, maintaining, monitoring, and closing tailings facilities. For new tailings facilities, the Standard requires designers to presume an 'Extreme' consequence of failure classification. Operators can rebut this presumption only when specific conditions are met. Where upgrading an existing facility is not feasible, the Operator must reduce the consequences of a potential failure to the greatest extent possible. Recognizing that tailings facilities are dynamic engineered structures, Topic Area 3 requires the ongoing use of an updated knowledge base, consideration of alternative tailings technologies, robust designs, and well managed construction and operation processes to minimize the risk of failure. It also specifies the development and implementation of an Operations, Maintenance and Surveillance (OMS) Manual that supports effective risk management of the tailings facility. A comprehensive monitoring system must support the fulFE and the EoR is also in question for an internal delegate. better than those initially assumed can a less conservative design be incorporated in the cons	Topic Area 3 aims to lift the performance bar for designing, constructing, operating, maintaining, monitoring, and closing tailings facilities. For new tailings facilities, the Standard requires designers to presume an 'Extreme' consequence of failure classification. Operators can rebut this presumption only when specific conditions are met. Where upgrading an existing facility is not feasible, the Operator must identify and implement measures to control risks and reduce the consequences as feasible of a potential failure. Recognizing that tailings facilities are dynamic engineered structures, Topic Area 3 requires the ongoing use of an updated knowledge base, consideration of alternative tailings technologies, robust designs, and well managed construction and operation processes to control the risk of failure. It also specifies the development and implementation of an Operations, Maintenance and Surveillance (OMS) Manual that supports effective risk management of the tailings facility. A comprehensive monitoring system must support the full implementation of the Observational Method and the use of a performance-based approach for the tailings facility lifecycle, including post-closure until relinquishment.	There are generally more opportunities to reduce the risks than the consequences at an existing facility. Risk assessment and management through referenceable methods should be a foundation of the Standard, and therefore "control" or "address" the risk should be cited rather than "minimize" in the Requirements (and here) unless appropriate qualification or basis for "minimize" are provided. Monitoring and the Observational Method also applies to the closure phase of the lifecycle, and monitoring continues into post-closure.

2	Overview of the Standard 5th Paragraph	Topic Area 4 focuses on the ongoing management and governance of a tailings facility. This section elevates the accountability for tailings facilities that would result in 'Very High' or 'Extreme' consequences in the event of failure, to the upper level of an organization's hierarchy – the Board of Directors or a member of senior management, as appropriate to the Operator's organizational structure). It also provides for the designation and assignment of responsibility to key roles in tailings facility management, including an Accountable Executive, an Engineer of Record, and a Responsible Tailings Facility Engineer. Further, it sets standards for critical systems and processes, such as the Tailings Management System and independent reviews, which are essential to upholding the integrity of a tailings facility during its entire lifecycle. Cross-functional collaboration and the development of a learning organizational culture that welcomes the identification of problems and protects whistleblowers are also incFE and	Topic Area 4 focuses on the ongoing management and governance of a tailings facility. This section elevates the accountability for tailings facilities that would result in 'Very High' or 'Extreme' consequences in the event of failure, to the upper level of an organization's hierarchy – the Board of Directors (or the top management of the company, as appropriate to the Operator's organizational structure). It also provides for the designation and assignment of responsibility to key roles in tailings facility management, including an Accountable Executive, an Engineer of Record, and a Responsible Tailings Facility Engineer. Further, it sets standards for critical systems and processes, such as the Tailings Management System and independent reviews, which are essential to upholding the integrity of a tailings facility during its entire lifecycle. Cross-functional collaboration and the development of a learning organizational culture that welcomes the identification of problems and protects whistleblowers are also included.	The repeated insertion of "or a member of senior management, as appropriate to the Operator's organizational structure" is a bit awkward and can be handled with a footnote (suggested new footnote) clarifying the cases where the company does not have a Board f Directors and subsequent use of the term "Board" whenever the intent is to affirm a responsibility of the top management of the company.
3	Role of the State, 1st paragraph	The Standard guides the conduct of Operators but it also informs States about best practices for tailings facilities and it affords them a framework for designing rules for managing such facilities where required. This is a critical point because States are uniquely situated to provide independent oversight of the permitting, construction, operation, maintenance, monitoring, and closure of tailings facilities. They are likewise the most appropriate entity to set up an independent inspection and enforcement program capable of identifying problems early and making sure those problems are corrected promptly before they increase the risk of catastrophic failures.	From a practical standpoint the Operator is in the best position to identify potential problems and set a course of action to address the problem. The Operator is on site full time and as such in the best position to identify any upcoming changes in the ore body and/or process. Also being in site full time gives the Operator the opportunity to observe signs of a potential problem. The State representatives are rarely on site.	
3	The Role of the State 2nd Paragraph	Not all States currently have the capacity to carry out these tasks. Good oversight requires a comprehensive understanding of the planning and engineering necessary to build, operate, maintain, and ultimately close tailings facilities. Inspectors with the credibility and authority to issue citations and to mandate appropriate corrective actions must share an understanding of these issues and possess the capacity to identify solutions to reported problems. Moreover, developing a reliable and professional staff where one does not currently exist will require time and resources and these may be scarce. All States with tailings facilities should aspire to develop and implement an effective and well-staffed regulatory program.	Not all States currently have the capacity to carry out these tasks. Good oversight requires a comprehensive understanding of the planning and engineering necessary to build, operate, maintain, and ultimately close tailings facilities. Inspectors with the credibility and authority to issue citations and to mandate appropriate corrective actions must share an understanding of these issues and possess the capacity to scrutinize solutions to reported problems. Moreover, developing a reliable and professional staff where one does not currently exist will require time and resources and these may be scarce. All States with tailings facilities should aspire to develop and implement an effective and well-staffed regulatory program.	In regards to the State's responsibilities for inspection and enforcement, suggest using the word "scrutinize" or "evaluate" rather than "identify" solutions to problems.
10	Implementation (5th bullet)	resources to conduct compliance monitoring	resources and procedures to conduct compliance monitoring	See comment below on DQP. You can have great resources, but the comprehensive approach to monitoring required procedures, trainings, equipment, data quality objectives, etc.

TOPIC I: KNOWLEDGE BASE

Page #	Reference	Draft Standard Wording	Comment, Question or Proposed Alternate Wording	Rationale for the change
6	Principle 1	Develop and maintain an updated knowledge base to support safe tailings management across the tailings facility lifecycle.	Develop and maintain an updated owner knowledge base to support safe tailings management across the tailings facility lifecycle.	Clarify that the TSF owner needs to be responsible and knowledgeable. It is a given that the EoR will be.
6	Requirement 1.1	Develop and regularly update knowledge about the social, economic and environmental context of a tailings facility, aligned with international best practice.	Develop and regularly update knowledge about the social, economic and environmental context of a tailings facility, aligned with international commonly accepted best practices.	
6	Principle 1: Footnote 3	Updates should be carried out whenever there is a material change to the tailings facility , the social or environmental context or conditions, or at a minimum every 3 years for 'Very High' and 'Extreme' Consequence Classifications, and every 5 years for others.	...material change to the tailings facility , changes in the ore feed or processing**,** the social or environmental context or conditions, or at a minimum every 3 years..	Changes over time in the ore feed, mineralogy, and physical or chemical characteristics of the tailings can lead to changes in the geotechnical, hydrogeologic and geochemical risks
6	Principle 1: Footnote 3	Updates should be carried out whenever there is a material change to the tailings facility , the social or environmental context or conditions, or at a minimum every 3 years for 'Very High' and 'Extreme' Consequence Classifications, and every 5 years for others.	Updates should be carried out whenever there is a material change to the tailings facility , the social or environmental context or conditions, or at a minimum every 3 years for 'Very High' and 'Extreme' Consequence Classifications, and every 5 years for others. The EoR may request more frequent reviews based on the mine plan or other factors that do not fall in the category of "material changes".	As the industry evolves towards smaller deposits, the expected life span or pace of mining operations may merit more frequent updates.
6	Requirement 1.1	Develop and regularly update knowledge about the social, economic and environmental context of a tailings facility, aligned with international best practice.	Not clear what the intent or purpose of this requirement.	Clearly explain what this is for.

6	Requirement 1.2	Prepare and regularly update detailed site characterization of the tailings facility site(s) that includes geomorphology, geology, geochemistry, hydrogeology, geotechnical, seismicity and hydrology. The physical and chemical properties of the tailings shall be determined and regularly updated.	Consider what is an appropriate confidence level for site characterization. For example, consider the approach taken by National Instrument (Canadian) 43-101 approach to resource definition. What triggers updates to the site characterization? Is it acceptable to "close" the characterization for a "discrete" project? Does this allow a staged characterization?	Inadequate site characterization and understanding of the geology and impacts on the TSF are often the underlying reason for dam failures.
6	Requirement 1.2	Prepare and regularly update detailed site characterization of the tailings facility site(s) that includes geomorphology, geology, geochemistry, hydrogeology, geotechnical, seismicity and hydrology. The physical and chemical properties of the tailings shall be determined and regularly updated.	Prepare and regularly update detailed site characterization of the tailings facility site(s) that includes geomorphology, geology, geochemistry, hydrogeology, geotechnical, seismicity and hydrology. The physical and chemical properties of the tailings shall be determined and regularly updated if changes are noted either by the public or the EoR [3].	Updates are too often to be practically completed by qualified personnel available. Footnote 3 needs to be updated as "Updates should be carried out whenever there is a major change to the tailings facility, the social or environmental context or conditions, or at a minimum every 5 years for 'Very High' and 'Extreme' Consequence Classifications, and every 10 years for others."
6	Requirement 1.3	Where there is a potential for flow failure, conduct and regularly update an inundation study for the tailings facility using a methodology that considers credible hypothetical failure modes, site conditions, tailings facility conditions, hydraulic routing models of the slurry, and the amount of tailings and downstream materials entrained in the outflow. The results of the study should include estimates of the inundation area, flow arrival times, depth and velocities, duration of flooding, and depth of material deposition.	Where there is a potential for flow failure, conduct and regularly update an inundation study for the tailings facility using a methodology that considers credible hypothetical failure modes, site conditions, tailings facility conditions, hydraulic routing models of the slurry, and the amount of tailings and downstream materials entrained in the outflow. The results of the study should include estimates of the inundation area, flow arrival times, depth and velocities, duration of flooding, and depth of material deposition. Updates should be completed every 10 years or if and when downstream conditions greatly change. Methodology for the inundation studies should follow internally accepted guidelines	Need to define update period. 3 years later on in document is too often. Also need to reference some method to be accepted.
6	Requirement 1.3	Where there is a potential for flow failure, conduct and regularly update an inundation study for the tailings facility using a methodology that considers credible hypothetical failure modes, site conditions, tailings facility conditions, hydraulic routing models of the slurry, and the amount of tailings and downstream materials entrained in the outflow. The results of the study should include estimates of the inundation area, flow arrival times, depth and velocities, duration of flooding, and depth of material deposition.	Dam breach analyses should also consider Population at Risk (PAR), and identification of critical infrastructure. CDA is working on a standard approach, that is a great start. Also, the inundation evaluation should be evaluated when usage to the downstream potential impact zone occur (e.g. people moving in or other land use changes)	Need to tie level of analysis to the project stage. For example, a dam breach analysis for initial planning and siting studies can be must less detailed than a breach analysis to support final design and permitting.
6	Requirement 1.3	Where there is a potential for flow failure, conduct and regularly update an inundation study for the tailings facility using a methodology that considers credible hypothetical failure modes, site conditions, tailings facility conditions, hydraulic routing models of the slurry, and the amount of tailings and downstream materials entrained in the outflow. The results of the study should include estimates of the inundation area, flow arrival times, depth and velocities, duration of flooding, and depth of material deposition.	Where there is a potential for flow failure, conduct an inundation study for the tailings facility using a methodology that considers credible hypothetical failure modes, site conditions, tailings facility conditions, hydraulic routing models of the slurry, and the amount of tailings and downstream materials entrained in the outflow. The results of the study should include estimates of the inundation area, flow arrival times, depth and velocities, duration of flooding, and depth of material deposition. The study should be updated whenever a material change is made in the design, construction, and/or operation of the facility; when a major change occurs in the downstream inundation area; or when other conditions warrant an update to the study (e.g., a major change in the methodology for conducting such studies). The need for update to the inundation study should be reviewed and documented as part of the reviews described in Topic III.	The use of a footnote isn't ideal here. It is preferred to incorporated the need for and frequency of formal updates to the inundation study in this requirement. Suggest that a formal review be performed on the 3 or 5 year schedule as part of a "Design Criteria Review" or possibly the "Deviance Accountability Report (DAR)" similar defined in Topic III.
7	Principle 2	Integrate the social, economic, environmental and technical information to select the site and the technologies to minimize the risk of tailings facility failure.	...to minimize the risk of tailings facility failure or impacts.	The standard has been written to address the major issue of TSF failures, but also addresses potential environmental impacts of a TSF. Throughout the standard, there are references to TSF failure that overlook or play down the other potential impacts of a TSF, such as dust, groundwater contamination, acid drainage, metal leaching, and process fluid spills. If the objective of the standard is to develop a "global standard for the safe and secure management of mine tailings facilities" we need to ensure a balanced focused on managing the risk of ALL the potential TSF impacts, rather the focusing on failure.
7	Requirement 2.2	Engage an *Independent Tailings Review Board* (ITRB) or an independent *senior technical reviewer(s)* with no conflicts of interest to assess and review the *alternatives analysis* for site and technology selection .	Define conflict of interest.	
7	Requirement 2.2	Engage an Independent Tailings Review Board (ITRB) or an independent senior technical reviewer with no conflicts of interest to assess and review the alternatives analysis for site and technology selection.	Engage an Independent Tailings Review Board (ITRB) or an Independent Expert Technical Reviewer (IETR) with no conflicts of interest to assess and review the alternatives analysis for site and technology selection.	There appears to be 3 different applications of the term "independent senior technical reviewer". Suggest in Requirement 2.2 to use the term "independent expert technical reviewer (IETR) to avoid confusion. An independent expert who performs in lieu of a Board should have more extensive experience and qualifications than a "senior technical reviewer" who may perform Dam Safety Reviews or other review functions defined elsewhere in the standard. The minimum qualifications for IETR as well as members of the ITRB should developed and defined in a separate, supporting document.

7	Requirement 2.2			Comment: Ideally, the Engineer of Record (EOR) should be selected to prepare the alternative analyses. The EOR could be changed through project development, but it should be understood that the EOR role should ideally begin at the conceptual stage.
7	Requirement 2.3	Use the knowledge base to assess the social, economic and environmental impacts of the tailings facility and its potential failure. Develop impact mitigation and management plans, and meaningfully engage potentially affected communities in the process.	Add sentence "Perform a thorough baseline study to produce representative data on predevelopment conditions of the proposed tailings facility."	In many cases, the only way to determine and quantify non-failure TSF impacts is by comparison to a robust, defensible and representative baseline dataset.
7	Requirement 2.4	Update the assessment of the social, economic and environmental impact and update stakeholder identification and information for any material change to the tailings facility, the social or environmental context or conditions. If new data indicates that the impacts from the tailings facility differ from those assumed in the original assessments, the management of the facility shall be adjusted to reflect the new data using adaptive management best practices.	Update the assessment of the social, economic and environmental impact and update stakeholder identification and information for any major ~~material~~ change to the tailings facility, the social or environmental context or conditions. If new data indicates that the impacts from the tailings facility differ significantly from those assumed in the original assessments, the management of the facility shall be adjusted to reflect the new data using adaptive management best practices.	Need to define change as major and significant, not just any change in the TSF.
8	Requirement 2.5	The amount of financial assurance shall be reviewed periodically and updated based on estimated closure and post-closure costs.	The amount of financial assurance shall be reviewed periodically and updated based on estimated closure and post-closure costs for any major change or every 10 years.	Define major change and maximum time period
8	Requirement 2.5	The amount of financial assurance shall be reviewed periodically and updated based on estimated closure and post-closure costs.	Very vague, for a potentially complex issue. Maybe restate that tailings facilities should be fully bonded, such that a governmental agency or other stakeholder has the financial means to close and remediate the facility should the current operator become insolvent or does not close the facility to the agreed-upon standard and final land use.	
8	Requirement 2.6	Taking into account actions to mitigate risks, the Operator will consider obtaining appropriate insurance to the extent commercially reasonable or providing other forms of financial assurance if appropriate to address risks relating to the construction, operation, maintenance, and/or closure of a tailings facility	Define as pollution liability insurance. Obtain clear legal definition from insurance carriers.	If this is intended to be similar to pollution liability insurance, that is fine. This could be interpreted to include Natural Resources Damages (reference NOAA, Dept of Interior, and EPA regulations). Not sure if this is intended.

TOPIC II: AFFECTED COMMUNITIES

Page #	Reference	Draft Standard Wording	Comment, Question or Proposed Alternate Wording	Rationale for the change
9	Principle 3	Respect the rights of project-affected people and meaningfully engage them at all stages of the tailings facility lifecycle.	Respect the rights12 of project-affected people (PAP) and meaningfully engage them at all stages of the tailings facility lifecycle.	First call out in the text.
9	Footnote 12	As defined in the United Nations Guiding Principles on Business and Human Rights (UNGP).	Add year of the document for reference	
9	Footnote 12	Demonstrating respect for indigenous peoples rights may involve obtaining their 'free prior and informed consent' (FPIC), as outlined in the ICMM.	Add year of document for reference	
9	Requirement 3.1	Demonstrate respect for human rights by conducting human rights due diligence to understand how a tailings facility failure may cause or contribute to adverse human rights impacts, including impacts on the individual and collective rights of indigenous peoples and tribal peoples.	Not sure what human rights due diligence means even after reading the footnote.	
9	Requirement 3.1	Demonstrate respect for human rights by conducting human rights due diligence to understand how a tailings facility failure may cause or contribute to adverse human rights impacts, including impacts on the individual and collective rights of indigenous peoples and tribal peoples.	Adverse human rights impacts: Wouldn't the impact from a dam failure be more of a physical nature than human rights-related? It would seem the bigger issue would be that resettlement or other mitigation measures would not be taken by a company or government because some group's rights were not respected.	
9	Requirement 3.2	Meaningfully engage project affected people throughout the tailings facility lifecycle regarding the matters that affect them.	Meaningfully engage PAP throughout the tailings facility lifecycle regarding the matters that affect them.	
9	Requirement 3.3	Where the risks of a potential tailings facility failure could result in loss of life or sudden physical and/or economic displacement of people, the Operator shall consider in good faith additional measures to minimize those risks or implement resettlement following international standards.	Where the risks of a potential tailings facility failure could result in loss of life or sudden physical and/or economic displacement of people, the Operator shall consider in good faith additional measures to minimize those risks or implement resettlement following international standards.	In good faith: Vague term – what does it really mean? May just want to delete.
9	Requirement 3.3	The Operator shall communicate these decisions to those affected.	Assume that the communication would happen prior to construction and that the PAP would provide ample time for the PAP to plan for changes in their lives.	
9	Requirement 3.4	Establish an effective operational-level, non-judicial grievance mechanism that addresses the concerns, complaints and grievances of project affected people that relate to the tailings facility19.	Establish an effective operational-level, non-judicial *grievance mechanism* that addresses the concerns, complaints and grievances of PAP that relate to the *tailings facility* 19.	
9	Requirement 3.3	Where the risks of a potential *tailings facility* failure could result in loss of life or sudden *physical and/or economic displacement* of people, the Operator shall con- sider in good faith additional measures to minimize those risks or implement resettlement following international standards18. The Operator shall communicate these decisions to those affected.	the reference to economic displacement should make it clear that this also applies in cases of dam failures (the definition only refers to land acquisition) – language can mirror that of the physical displacement definition. Also, should there be a time limit or method of communication specified? The language requiring the operator to communicate is vague as written.	

9	Requirement 3.4	Establish an effective operational-level, non-judicial *grievance mechanism* that addresses the concerns, complaints and grievances of *project-affected people* that relate to the *tailings facility* 19 .	Binding arbitration? How does this non-judicial mechanism tie into the legal options available?	This is a great idea, if practical and adopted. Needs more detail.
9	Footnote 17 and 18	such as the IFC's Social and Environmental Performance Standards	IFC is not defined here or in Annex 1.	Reader may not be familiar with IFC
9	Footnote 19	This process may be part of an existing operational-level grievance mechanism, which may in turn form part of the mine- wide ESMS.	ESMS is not defined here and not easy to look up in Annex 1.	Reader may not be familiar with ESMS

TOPIC III: DESIGN, CONSTRUCTION, OPERATION AND MONITORING OF THE TAILINGS FACILITY

Page #	Reference	Draft Standard Wording	Comment, Question or Proposed Alternate Wording	Rationale for the change
10	Requirement 4.1	Presume the consequence of failure classification of all new tailings facilities as being 'Extreme' (see Annex 2, Table 1: Consequence Classification Matrix) and design, construct, operate and manage the facility accordingly. This presumption can be rebutted if the following three conditions are met: a)The knowledge base demonstrates that a lower classification can be applied for the near future, including no potential for impactful flow failures; and b)A design of the upgrade of the facility to meet the requirements of an 'Extreme' consequence of failure classification in the future, if required, is prepared and the upgrade is demonstrated to be feasible; and c)The consequence of failure classification is reviewed every 3 years, or sooner if there is a material change in any of the categories in the Consequence Classification Matrix, and the tailings facility is upgraded to the new classification within 3 years. This review should proceed until the facility has been safely closed(20) and achieved a confirmed 'landform' status or similar permanent non-credible flow failure state.	Presume the consequence of failure classification of all new tailings facilities as being 'Extreme' (see Annex 2, Table 1: Consequence Classification Matrix) and design, construct, operate and manage the facility accordingly. This presumption can be rebutted if the following three conditions are met: a)The knowledge base and Potential Failure Modes Analysis demonstrates that a lower classification can be applied for the near future, including no potential for impactful flow failures based on site specific information and testing data and complemented with published information on similar tailings materials; and b)A design of the upgrade of the facility to meet the requirements of an 'Extreme' consequence of failure classification in the future, if required, is prepared and the upgrade is demonstrated to be feasible (upgrade can include measures to mitigate consequences); and c)The consequence of failure classification is reviewed every 3 years, or sooner if there is a material change in any of the categories in the Consequence Classification Matrix, and the tailings facility is upgraded to the new classification within 3 years. This review should proceed until the facility has been closed (20) and supported by a Potential Failure Modes Analysis based on site-specific information and testing data demonstrating that downstream impacts do not rise to the Low Consequence Classification, whether from flooding or flow failure.	Rebuttal of Consequence Classification of "Extreme" should be broadened to also include a Potential Failure Modes Analysis with additional failure modes, including ones involving water management. Presuming that the intent of "no potential for impactful flow failures" is that if flow failure (defined as loss of shear strength with increasing stress) can occur, it does not impact downstream conditions beyond the proposed Consequence Classification, then recommend such analysis be based on site specific information and testing data and complemented with published information on the same or similar tailings materials, and supported by performing a Potential Failure Modes Analysis. Note also proposed revisions to Footnote 20 on closure. The requirement to move to landform for all facilities is a major step-change. We recommend that the decision to a final disposition be based on the PFMA. As an alternative to an "upgrade", could some form of mitigation to prevent or mitigate "extreme" consequences be proposed – e.g., purchasing land within the inundation area or relocating impacted facilities?
10	Requirement 4.2	The decision to rebut the requirement to design for 'Extreme' Consequence Classification, shall be taken by the **Accountable Executive** or the ***Board of Directors*** (the 'Board'), with input from an independent ***senior technical reviewer*** or the ***ITRB*** . The Accountable Executive or Board shall give written reasons for their decision.	The decision to rebut the requirement to design for 'Extreme' Consequence Classification, shall be taken by the **Accountable Executive** or the ***Board of Directors*** (the 'Board'), with input from the ITRB or an Independent Expert Technical Reviewer (IETR), and the Engineer of Record (EOR), based on the Potential Failure Modes Analysis. The Accountable Executive or Board shall give written reasons for their decision.	Addition to provide for consistency with proposed change to Requirement 4.1, and flexibility to be able to appoint an Individual TSF Expert rather than a Board as warranted and consistent with Requirement 11.5.
10	Requirement 4.3	***Existing facilities*** shall comply with Requirements 4.1 and 4.2. Where the required upgrade is not feasible, the Board, or senior management (as appropriate based on the Operator's organizational structure), with input from the ITRB, shall approve the implementation of measures to reduce the risks of a potential failure to the greatest extent possible.	***Existing facilities*** shall comply with Requirements 4.1 and 4.2. Where the required upgrade is not feasible, the Board, with input from the ITRB/IETR and the EOR, shall approve the implementation of measures to reduce the risks associated with identified potential failure modes. Until compliance with the Requirements 4.1 and 4.2 has been achieved, the Board will review and approve, at least every 3 years, additional risk reduction measures based on input from the ITRB/IETR and EOR, with update of the Potential Failure Modes Analysis and risk assessment. A timeline should be developed to identify the target timeframe to meet Requirements 4.1 and 4.2.	Suggest change to eliminate reference to reducing risks to "the greatest extent possible," and have a more definable standard of implementing risk reduction measures, and continuing to evaluate potential failure modes and conduct risk assessment every 3 years to identify/implement additional risk reduction measures. To allow for existing facilities that operate as low or significant hazard potential impoundments to continue, and that may not have established ITRB, add "independent senior technical reviewer" as an alternative.
10	Requirement 5.1	Consider implementation of alternative options, including but not limited to in-pit disposal and underground tailings placement, and application of the technologies selected according to Requirement 2.1, to minimize the amount of tailings and water placed in external(21) tailings facilities.	Consider implementation of alternative options, including but not limited to in-pit disposal and underground tailings placement, and application of the technologies to minimize the amount of tailings and water placed in external(21) tailings facilities as supported by alternative and impact analysis consistent with Requirements 2.1 and 2.3 .	Qualify the term "minimize" by reference to "alternative and impact analysis," and to also ensure that sole design focus on waste minimization is not interpreted.

10	Footnote 20	Safe closure is achievement of a confirmed 'landform' status or similar status that also has a permanent non-credible flow failure state.	Closure comprises providing stable containment of mine wastes under static and seismic loading conditions, with substantial elimination of excess surface water not required for treatment or cover systems and sustainable measures in place to protect the integrity of the TSF in the event of the design flood without the need for intervention.	For the purpose of Requirement 4.1 and closure, revise footnote to address broader requirements, and allow flow failures to be addressed by satisfying static and seismic conditions, recognizing that Consequence Classification may still exist due to susceptibility of tailings to flow failure. To move out of Post-Closure, the susceptibility to flow failure would need to be addressed, or the Consequence Classification must be below Low. Address closure and post-closure status in Requirement 5.6. "Flow Failure" here appears to refer to liquefaction of the tailings, but the potential for erosion-related failure in the event of overtopping should also be considered. The "landform" reference is to a *walk-away* solution; however, many owners now accept the need for periodic maintenance and repair, say of erosion and settlement and periodic removal of trees and such from channels and covers. We don't agree that landform should be the requirement for ALL facilities.
11	Requirement 5.3	Develop a ***robust design*** that considers the social, economic and environmental context, the tailings facility Consequence Classification, site conditions, water management, mine plant operations, tailings operational issues, and the construction, operation and closure of the tailings facility.		See recommended revisions to definition of "robust design" below
11	Requirement 5.4	Address all credible failure modes of the structure, its foundation, abutments, reservoir (tailings deposit and pond), reservoir rim and appurtenant structures to minimize risk. Risk assessments must be used to inform the design.	The EOR shall conduct a Potential Failure Modes Analysis (PFMA) of the structure, its foundation, abutments, reservoir (tailings deposit and pond), reservoir rim and appurtenant structures and evaluate risks. The PFMA must be reviewed by the ITRB/IETR. Risk assessments must be used to inform the design.	Avoid term "credible failure modes" without definition. Recommend conducting a Potential Failure Modes Analysis, and evaluate risks.
11	Requirement 5.6	Design the closure stage in a manner that meets all the Requirements of the Standard with sufficient detail to demonstrate the feasibility of the closure scenario and allows immediate implementation of elements of the design, as required. The design should include, where possible, progressive closure and ***reclamation*** during operations.	Design the closure stage in a manner that meets all the Requirements of the Standard with sufficient detail to demonstrate the feasibility of the closure scenario and allows immediate implementation of elements of the design, as required. The design must include a construction cost estimate and timeline, and where possible, progressive closure and ***reclamation*** during operations. The closure design must address transition with substantial elimination of excess surface water impounding capacity, containment as a mine waste structure, and ultimately through post-closure status with relinquishment as a landform that averts potential failure modes that impact downstream conditions, or reprocessing, relocation or removal.	Include construction cost estimate for closure to demonstrate feasibility, and timeline for closure. The design needs to address post-closure status, and based on a well crafted definition, and relinquishment would be aimed at meeting the requirements of a landform that averts potential failure modes including flow failures that impact downstream conditions.
11	PRINCIPLE 6	Adopt design criteria that minimize risk[22].	Adopt design criteria that minimize risk to people, environment and the Operator.	In the Draft Standard, risk is sometimes qualified to include people and environment, without reference to Operator. In Principle 6, risk should be clearly expressed without reference to the footnote.
11	Requirement 6.1	Select and clearly identify design criteria that are appropriate to reduce risk for the adopted Consequence Classification for all stages of the *tailings facility lifecycle* and for all credible failure modes	Select and clearly identify design criteria that are appropriate to reduce risk for the adopted Consequence Classification for all stages of the *tailings facility lifecycle* and based on Potential Failure Modes Analysis.	Consistent with comment on Requirement 5.4, recommend citing PFMA rather than credible failure modes.
11	Requirement 6.2	Apply factors of safety that consider the variability and uncertainty of geologic and construction materials and of the data on their properties, the parameters selection approach, the mobilized shear strength with time and loading conditions, the sensitivity of the failure modes and the strain compatibility issues, and the quality of the implementation of risk management systems.	Apply factors of safety or probability against failure modes that consider the variability and uncertainty of geologic and construction materials and of the data on their properties, the parameters selection approach, the mobilized shear strength with time and loading conditions, the sensitivity of the failure modes and the strain compatibility issues, and the capability of the monitoring and risk management systems.	Encourage probability analysis; recommend clarify with reference to "capability" rather than "quality" and the "monitoring systems" as well as risk management system.
11	Requirement 6.3	Identify and address brittle failure mechanisms with conservative design criteria and factors of safety to minimize the likelihood of their occurrence, independent of trigger mechanisms.	Identify and address brittle failure mechanisms with conservative design criteria to avert a role in potential failure modes, independent of trigger mechanisms. Whenever practical, construct tailings retaining structures to achieve dilative conditions and avoid the use of brittle materials.	Design criteria include factors of safety, such that recommend eliminating the reference as in some situations designing to limit deformation may be a more direct approach. Revise reference to minimize", by substituting reference to averting its role in potential failure modes.
11	Requirement 6.3	Identify and address brittle failure mechanisms with conservative design criteria and factors of safety to minimize the likelihood of their occurrence, independent of trigger mechanisms.	How does one identify this in the design phase without access to deposited tailings?	
11	Requirement 6.4	The EOR shall prepare a *Design Basis Report* (DBR) that details the design criteria, including operating constraints, and that provides the basis for the design of all stages of the *tailings facility lifecycle* . The *DBR* must be reviewed by the *ITRB* or senior independent technical reviewer.	The EOR shall prepare a *Design Basis Report* (DBR) that details the design criteria, including operating constraints, and that provides the basis for the design of all stages of the *tailings facility lifecycle* . The *DBR* must be reviewed by the *ITRB* or *IETR.*	
12	Principle 7	Build and operate the *tailings facility* to minimize risk.	Build and operate the *tailings facility* to minimize risk to people, environment and the Operator.	See comment on Principle 6

12	Requirement 7.1	Build, raise, operate, monitor and close the tailings facility according to the design intent of all stages of the *tailings facility lifecycle* , using qualified personnel and appropriate methodology, equipment, procedures, data acquisition, the *TMS* and the *environmental and social management system (ESMS).*	Build, raise, operate, monitor and close the tailings facility, under the ~~supervision~~ oversight of the EOR and according to the design intent of all stages of the *tailings facility lifecycle* , using qualified personnel and appropriate methodology, equipment, procedures, data acquisition, the *TMS* and the *environmental and social management system (ESMS).* Conduct reviews consistent with Principle 11.	Add reference to reviews under Principle 11, including EOR, independent senior technical reviewer, and ITRB reviews. If the EOR is to be accountable for certification of the TSF they need to be involved in every aspect of the structure. See recent failures for examples.
12	Requirement 7.2	Manage the quality and adequacy of the construction and operation process by implementing ***Quality Control, Quality Assurance*** and ***Construction vs Design Intent Verification (CDIV)*** . CDIV shall be used to ensure that the design intent is implemented and is still being met if the site conditions vary from the design assumptions.	Manage the quality and adequacy of the construction and operation process by implementing ***Quality Control, Quality Assurance*** and ***Construction vs Design Intent Verification (CDIV)*** . Implementation plans and reports of results for these programs shall be prepared or reviewed by the EOR. CDIV shall be used to verify that the design intent is implemented and is still being met if the site conditions vary from the design assumptions.	The terms in BOLD need to be added to the glossary. These programs should include implementation plans and reports of results. Note that QC, QA and CDIV are AFTER THE FACT and verify or validate, but do not make it so. Yes, they provide, when done properly, a valuable, essential, record of what is there,, and a defect might be found and addressed. But these are spot-checks and might miss something. We trust the builder and operator. See suggested additions above.
12	Requirement 7.2	Manage the quality and adequacy of the construction and operation process by implementing ***Quality Control, Quality Assurance*** and ***Construction vs Design Intent Verification (CDIV)*** . CDIV shall be used to ensure that the design intent is implemented and is still being met if the site conditions vary from the design assumptions.	A QA/QC plan is only part of the requirement to produce accurate, precise, complete and representative data. Monitoring of the TSF requires a wide range of processes, that fall under a "Data Quality Assurance Plan". The document should mention the need for a DQAP describing sampling/monitoring procedures, data acquisition, QA/QC procedures, data quality objectives, data interpretation and data management. I have seen too many mines that collect data, but since they do not understand why and do not have a DQAP, the data are of very poor quality, they don't know how to interpret or use the data, and the whole exercise is a massive waste of time and money. QA/QC should be part of the DQAP.	
12	Requirement 7.3	Prepare a detailed ***Construction Records Report*** at least annually or whenever there is any change to the *tailings facility* , its infrastructure or its monitoring system. The *EOR* shall sign this report.	Prepare a detailed ***Construction Records Report*** *under the oversight of and validated by the EOR* at least annually or whenever there is any change to the *tailings facility* , its infrastructure or its monitoring system. ~~The *EOR* shall sign this report.~~	If it is a certificate it needs to be not just signed - we saw where that gets us.
12	Requirement 7.4	Develop, implement and annually update an ***Operations, Maintenance and Surveillance (OMS) Manual*** that supports effective risk management as part of the *TMS* . The *OMS Manual* should follow *best practices* , clearly provide the context and *critical controls* for safe operations, and be reviewed for effectiveness. The *EOR* and *RTFE* shall provide access to the *OMS Manual* and training to all personnel involved in the *TMS* .	Develop, implement and annually update an ***Operations, Maintenance and Surveillance (OMS) Manual*** that supports effective risk management as part of the *TMS* . The *OMS Manual* should be prepared or approved by the EOR, follow *best practices* , clearly provide the context and *critical controls* for safe operations, and be reviewed for effectiveness. All personnel involved with the *TMS* shall receive training as approved by the RTFE or EOR, including understanding of project risks.	The OMS Manual should be prepared or approved by the EOR to ensure it is consistent with the design intent. Training of all personnel involved with the TMS, including contractors building the structure, should be aware of project risks and risk management practices. I agree with this, and suggest education gets it's own call-out.
12	Requirement 7.5	Implement a formal *change management system* that triggers the evaluation, review, approval and documentation of all changes to design, construction, operation and monitoring during the *tailings facility lifecycle* . *The change management system* shall also include the requirement for a periodic ***Deviance Accountability Report*** **(DAR)**, prepared by the *EOR,* that provides an assessment of the cumulative impact of the changes on the risk level of as-constructed facility. The *DAR* shall provide any resulting requirements for updates to the design, *DBR, OMS* and the monitoring program.	Implement a formal *change management system* that triggers the evaluation, review, approval and documentation of all changes to tailings production rates, water storage, and design, construction, operation and monitoring during the *tailings facility lifecycle* . *The change management system* shall also include the requirement for a periodic ***Deviance Accountability Report*** **(DAR)**, prepared by the *EOR,* that provides an assessment of the cumulative impact of the changes on the risk level of as-constructed facility. The *DAR* shall provide any resulting requirements for updates to the design, *DBR, OMS* and the monitoring program.	Changes in tailings production or water storage for the mine can affect the tailings facility and lead to the need for associated changes in design, construction, operation and monitoring. Consider adding a minimum frequency for the DAR to Requirement 7.5
12	Requirement 7.6	Refine the design, construction and operation throughout the tailings facility lifecycle by considering the lessons learned from ongoing work and the evolving knowledge base, and by using opportunities for the inclusion of new and emerging technologies and techniques.	Refine the design, construction and operation throughout the tailings facility lifecycle by considering the lessons learned from ongoing work and the evolving knowledge base, changes in tailings production/ characteristics and water storage, and by using opportunities for the inclusion of new and emerging technologies and techniques.	See comment on Requirement 7.5
12	Requirement 7.7	Ensure that the *ESMS* is designed and implemented to align decisions about the tailings facility with the changing environmental and social context as identified in the knowledge base, in accordance with the principles of *adaptive management* .		
12	Requirement 7.8	Independent ***senior technical reviewers***, with qualifications and expertise in social and environmental sciences and performance management, shall carry out a full review of the *ESMS* and monitoring results every 3 years, with annual summary reports provided to relevant stakeholders.		This seems to be a different use of "Senior Technical Reviewer" than previously applied (prior to my suggestion of IETR). I suggest that this terminology is ok in this section. Like 8.2 below, this requirement is open to the question of who are the relevant stakeholders? This reads like the Cyanide Code, perhaps? Many miners already conduct this type of review through stewardship programs and Dam Safety Inspections as described by CDA, for example. But the results are for their own use.

	New Requirement 7.X		EDUCATE the constructor and the tailings management team with respect to the CRITERIA and DESIGN BASIS and the HAZARD CLASSIFICATION so that the TSF is built and operated in accordance with the established criteria and specifications with the hazard it represents always in mind. Establish construction methods and operating procedures that will result in the properties, configuration and attributes described in the design.	This is important because the characteristics of the TSF and it's resulting degree of hazard are dependent upon the actions of these people, not those performing periodic inspections.
	New Requirement 7.X		VALIDATE during the construction and operation phase the conclusions drawn from the Knowledge Base and assumptions made by the designer, particularly with respect to the foundation conditions, material properties and performance of key elements of the containment system.	This is in accordance with the ADAPTIVE APPROACH referred to later and has been key to several failures while, fortunately far more often, allowing implementation of modifications during construction that addressed surprises encountered. One does not blindly implement the design.
13	Requirement 8.1	Design, implement and operate a comprehensive performance monitoring program for the tailings facility that allows full implementation of the Observational Method and covers all potential failure modes.	This requirement introduces the Observational Method that is defined on Page 25. From another paper by R. B. Peck, Advantages and Limitations of the Observational Method in Applied Soil Mechanics, the following quote "Can the conditions for the successful use of the method be defined? Are there conditions under which the observational method cannot and should not be used? To the last question as least one categorical answer can be given. If the character of the project is such that the design cannot be altered during construction, the method is inapplicable. Otherwise it may have the potential for great savings in time and money. Or providing needed assurance for complete safety." For tailing facilities, the observational approach should be used with great care. While the approach is being used the initial design and construction must provide a safe structure for the worst-case conditions. Then and only then, after construction has proceed to the point that there is assurance through observation, and appropriate testing and monitoring that conditions are going to be better than those initially assumed can a less conservative design be incorporated in the construction. If less than the worst-case conditions are assumed as a basis for the initial design and construction has proceeded and observations indicate poorer conditions than assumed the engineer is faced with dealing with a structure that does not meet appropriate standards and in the worst case may fail.	
13	Requirement 8.1	Design, implement and operate a comprehensive performance monitoring program for the *tailings facility* that allows full implementation of the ***Observational Method*** and covers all potential failure modes.	Design, implement and operate a comprehensive performance monitoring program for the *tailings facility* *based on the OMS Manual and Potential Failure Mode Analysis, and* that allows full implementation of the ***Observational Method***.	Recommend citing the OMS Manual and Potential Failure Mode Analysis to ensure they provide a basis for the monitoring program.
13	Requirement 8.2	Establish performance objectives, indicators, criteria, and performance parameters and include them in the design a monitoring program that measures performance at all stages of the *tailings facility lifecycle* . Record, evaluate and publish the results at appropriate frequencies. Based on the data obtained, update the monitoring program throughout the *tailings facility lifecycle* to confirm that it remains effective.	Establish performance objectives, indicators, criteria, and performance parameters and include them in the design a monitoring program that measures performance at all stages of the *tailings facility lifecycle* . Record, evaluate and report the results at appropriate frequencies. Based on the data obtained, update the monitoring program throughout the *tailings facility lifecycle* to confirm that it remains effective.	Does the term "publish" mean they are to be made freely available to the public? I'd prefer different wording than "publish". REPORT has a similar obligation….to WHOM shall we report?
13	Requirement 8.3	Analyze monitoring data at the frequency recommended by the *EOR* , and assess the performance of the facility, clearly identifying and presenting evidence on any deviations from the expected performance and any deterioration of the performance over time. Promptly submit evidence to the *EOR* for review and update the risk assessment and design, if required. Performance outside the expected ranges shall be addressed swiftly through *critical controls* or *trigger response action plans* (TARPs).	Analyze monitoring data at the frequency recommended by the *EOR* , and assess the performance of the facility, clearly identifying and presenting evidence of deviations from the expected performance and deterioration of the performance over time. Promptly submit evidence to the *EOR* for review and update the risk assessment and design. Performance outside the expected ranges shall be addressed swiftly through *critical controls* or *trigger action response plans* (TARPs).	Eliminate the phrase "if required", to ensure that the EOR is advised of evidence of deviations from expected performance promptly. Eliminate term "any" in first sentence for consistency with wording in other requirements.

TOPIC IV: MANAGEMENT AND GOVERNANCE

Page #	Reference	Draft Standard Wording	Comment, Question or Proposed Alternate Wording	Rationale for the change

14	Requirement 9.1	For a proposed new facility where a potential credible failure could have 'Very High' or 'Extreme' consequences, the Board or senior management (as appropriate based on the Operator's organizational structure) shall be responsible for approving the proposal, after deciding what additional steps shall be taken to minimize the consequences.	For a proposed new facility where a potential credible failure could have 'Very High' or 'Extreme' consequences, the Board shall be responsible for approving the proposal, after deciding what additional steps shall be taken to reduce ~~control~~ risks ~~and~~ (reduce likelihood and the consequences) considering input from the EoR, Independent Technical Review Board (ITRB) or Independent Expert Technical Reviewer (IETR).	Rather than unqualified reference to "minimize the consequences," the Board should be presented with steps to control risk and reduce consequences based on independent expert review either through the ITRB or equivalent. Use of the role IETR to distinguish between other portions of the Standard that specify an independent senior technical reviewer who does not necessarily need to be an expert in TSFs. Removed "other senior management..." according to comment in Requirement 4.2 and Introductory Paragraph No. 5. IETR is included here, if Requirement 11.5 is changed to allow a single expert for some facilities. If an ITRB is required for all Very High and Extreme facilities, then IETR should be removed here. The EOR should be engaged at this phase and with sufficient project definition and before the ITRB, or the IETR is engaged.
14	Requirement 9.2	For an existing facility, where a potential credible failure could have 'Very High' or 'Extreme' consequences, the Board or senior management (as appropriate based on the Operator's organizational structure) shall mandate additional steps to minimize the consequences and publish reasons for its decision. This process is to be repeated at the time of every Dam Safety Review (DSR).	For an existing facility, where a potential credible failure could have 'Very High' or 'Extreme' consequences, the Board shall mandate the completion of a PFMA (or FMEA) and preparation of a report, prepared in coordination with the EOR and the ITRB/IETR, recommending additional steps to control (or minimize and mitigate? or reduce?) risks, by reducing either the potential consequences or likelihood of failure (or both), to the degree feasible. The Board shall either mandate the implementation of the recommended additional measures or provide justification for the decision not implement recommended measures, and shall document clearly the ~~publish~~ reasons for its decision. This process is to be repeated at the time of every Dam Safety Review (DSR).	There are generally more opportunities to reduce the risks (i.e., the likelihood) than the consequences at an existing facility. The DSR includes potential failure modes analysis, and evaluation of risks and risk reduction measures, and with review by the ITRB it should ensure that feasible measures are identified to achieve significant risk reduction. This also avoids using the term "minimize". Removed "other senior management..." according to comment in Requirement ___. The "publish reason for its decision" is broad term and publishing implies a larger audience with the decision subject to interpretation of a technical approach by non-tailing professionals who lack the necessary expertise and experience.
7	Requirement 10.1	The Board of the parent corporation shall adopt and publish a policy on or commitment to the safe management of tailings facilities, to emergency preparedness and response, and to recovery after failure that is mandatory for all its subsidiaries and joint ventures. The commitment shall require the Operator to establish a Tailings Management System (TMS), and a governance framework to assure the effective implementation and continuous improvement of the TMS.	Is there scope for a staged implementation of the requirements?	
14	Requirement 10.2	A member of senior management shall be accountable for the safety of tailings facilities and for minimizing the social and environmental consequences of a tailings facility failure. This Accountable Executive will also be accountable for a program of tailings management training, for emergency preparedness and response, and for recovery after failure. The Accountable Executive or delegate must have regular scheduled communication with the Engineer of Record (EOR).	A member of senior management ("Accountable Executive") shall be accountable for the safety of tailings facilities and for minimizing the social and environmental consequences of a tailings facility failure. This Accountable Executive will also be accountable for a program of tailings management training, for emergency preparedness and response, and for recovery after failure. The Accountable Executive or delegate must have regular scheduled communication with the Engineer of Record (EOR) and the ITRB/IETR.	The responsible tailing facility engineer (RTFE) should have direct communication with the accountable executive. Internal communication with the EoR should be facilitated. It is likely that the accountable executive will lack the necessary qualifications and will require technical support from the RTFE. Reporting between the account executive and the RTFE is best described in 10.3 below. Consistency between 10.2 and 10.3 should be should be maintained.
14	Requirement 10.4	For employees who have a role in the TMS, consider implementing a performance incentive program to include a component linked to the integrity of tailings facilities.	Strike Paragraph 10.4	The requirement (consider implementing) for implementation of a performance incentive program is not appropriate for this type of guidance. The adherence to governance should be addressed by the individual operation and work within their culture and incentive program.
15	Requirement 10.5	Identify appropriate qualifications and experience requirements for all personnel who play safety-critical roles in the operation of a tailings facility, in particular, for the RTFE, the EOR and the Accountable Executive. Ensure that occupants of these roles have the identified qualifications and experience, and develop succession plans for these personnel.	Identify appropriate qualifications and experience requirements for all personnel who play safety-critical roles in the operation of a tailings facility, in particular, for the RTFE, the EOR and the Accountable Executive. Ensure that occupants of these roles have the identified training, qualifications and experience, and develop succession plans for these personnel.	The recommendation is broad and nonspecific. It is open for interpretation and potentially creates a condition where poorly qualified individuals are placed in responsible positions such as the RTFE, the EoR or account executive. What about establishing similar qualifications for outside reviewers, including regulatory agencies, and NGOs?
15	Requirement 11.1	Conduct and regularly update risk assessments with a qualified multi- disciplinary team using best practice methodologies. Transmit risk assessments to the ITRB for review, and address with urgency all risks considered as unacceptable.	Conduct and regularly update risk assessments with a qualified multi- disciplinary team using best practice methodologies. Transmit risk assessments to the ITRB or IETR for review, and address with urgency all risks considered as unacceptable.	

15	Requirement 11.3	The EOR or a senior independent technical reviewer shall conduct annual tailings facility construction and performance reviews.	The EOR ~~or an Independent Senior Technical Reviewer~~ shall conduct and document annual tailings facility construction and performance reviews. In the rare occasions where the EOR is an employee of the company, the annual tailings facility construction and performance reviews shall be conducted and documented by an Independent Senior Technical Reviewer and the EOR.	Note that in this case, the term "senior independent technical reviewer" is appropriate since the person performing the annual review does not need to rise to the same level of experience and expertise as an IETR (who functions in lieu of a Board). Add "Independent senior technical reviewer" to the glossary. Develop minimum qualifications for the independent senior technical reviewer in a separate document -- suggest they should be similar to the requirements for an EOR. The responsibility of annual telling facility construction of performance reviews should be placed directly on the EoR. We are placing significant expectations and responsibilities on the EOR. It would not be unreasonable to have the EOR engaged in the annual review process if no other jurisdictional requirements exist. If the EoR is a company employee the annual review should be completed by an ISTR to maintain arms length independence from non engineering influences.
15	Requirement 11.4	A senior independent technical reviewer shall conduct an independent DSR periodically (every 3 to 10 years, depending on performance and complexity, and the Consequence Classification of the tailings facility). The DSR shall include technical, operational and governance aspects of the tailings facility and shall be done according to best practices. The DSR contractor cannot conduct a subsequent DSR on the same facility.	An Independent Senior Technical Reviewer (IETR) shall conduct an independent DSR periodically (every 3 to 10 years, depending on complexity and performance, and the Consequence Classification of the tailings facility). The DSR shall include technical, operational and governance aspects of the tailings facility and shall be done according to best practices. The DSR shall include review and update of the Potential Failure Modes Analysis with evaluation of risks and potential risk reduction measures. The DSR contractor cannot conduct a subsequent DSR on the same facility.	Again, in this case, the term "independent senior technical reviewer" is appropriate for the same reason as 11.3. Also, require that the DSR not only reviews the potential failure modes analysis, but performs an update with evaluation of risks and potential risk reduction measures. Requirement 9.2 then ensures that risks and risk reduction measures for existing facilities are conveyed to the Board. The requirement, although noble, lacks an understanding of the available industry resources. The requirement that rotating firms or individuals complete DSR's places additional pressure on a system that already lacks necessary resources and the associated ability to deliver these resources. There are clear technical and operational aspects to any dam review, but the governance aspects are not as well define. It will useful to have guidance on this issue.
15	Requirement 11.5	For tailings facilities with 'Very High' or 'Extreme' Consequence Classification, the ITRB, reporting to the Accountable Executive and/or the Board, shall provide ongoing senior independent review of the planning, siting, design, construction, operation, maintenance, monitoring, performance and risk management at appropriate intervals across all stages of the tailings facility lifecycle. For facilities with other consequence classifications, the ongoing senior independent review can be done by a single person.	For tailings facilities with 'Very High' or 'Extreme' Consequence Classification, the ITRB or IETR, reporting to the Accountable Executive and/or the Board, shall provide ongoing independent expert review of the planning, siting, design, construction, operation, maintenance, monitoring, performance and risk management at appropriate intervals across all stages of the tailings facility lifecycle. For facilities with other consequence classifications, the ongoing independent review can be done by a single person (i.e., an IETR).	This requirement should be clarified. It appears the intent is to allow an IETR only for facilities with consequence classification less than Very High, which isn't evident in Requirement 2.2. Given the number of tailings dams with Very High or Extreme classification, it may be difficult to find properly qualified Boards members. Perhaps the requirement for an ITRB could be applied to only the Extreme classification and allow IETRs for Very High consequence.
16	Requirement 12.1	Engage an engineering firm with expertise and experience in design and construction of tailings facilities of comparable complexity to provide EOR services for the tailings facility. Require that the firm nominate an individual to represent the firm as the EOR, in concurrence with the Operator, and verify that the individual has the necessary experience, skills and time to fulfil this role. Alternatively, the Operator may appoint an employee with expertise and experience in comparable facilities as the EOR. In this instance, the EOR may delegate the design to a firm ('Designer of Record') but shall remain thoroughly familiar with the design in executing their responsibilities as EOR.	Engage an engineering firm with expertise and experience in design and construction of tailings facilities of comparable complexity to provide EOR services for the tailings facility. Require that the firm nominate an individual to represent the firm as the EOR, in concurrence with the Operator, and verify that the individual has the necessary experience, skills and time to fulfil this role. ~~Alternatively, the Operator may appoint an employee with expertise and experience in comparable facilities as the EOR. In this instance, the EOR may delegate the design to a firm ('Designer of Record') but shall remain thoroughly familiar with the design in executing their responsibilities as EOR.~~	The situation where the Operator appoints an employee as the Engineer of Record should be clarified. How does the employee maintain independence in these cases? Aren't they potentially subject to cost or other pressures from senior management if they are internal to Operator or Owner? This specific scenario should have additional requirements to make sure that independence and integrity is maintained. Clear definition of the EoR, qualifications and operating battery limits should be provided by this document. It is the opinion of the review team that the EoR be an external firm. However, if the EoR is an internal delegate then the guidance should be adjusted accordingly. An external EoR provides a level of independence and quality that an internal delegate may not be able to afforded. Therefore, specific guidance that addresses internal EoRs should be added throughout this document. An internal delegate assigned as EoR is potentially in direct conflict with the RTFE. The interaction between the RTFE and the EoR is also in question for an internal delegate.
16	Requirement 12.3	Establish and implement a system to manage the quality of all engineering work, the interactions between the EOR, the RTFE and the Accountable Executive, and their involvement in the tailings facility lifecycle as necessary to confirm that both the implementation of the design and the design intent are met in all cases.		Considering establishing performance reviews for the EOR and RTFE to be implemented or overseen by the Accountable Executive. Performance of the Accountable Executive should be reviewed by the Board of Directors?

16	Requirement 12.4	Given its potential impact on the risks associated with a tailings facility, the selection of the EOR shall be decided by the Accountable Executive and not influenced or decided by procurement personnel.		This requirement is effectively part of our requirement of 12.1 and can be combined for consistency.
16	Requirement 12.5	Where it becomes necessary to change the EOR firm, develop a detailed plan for the comprehensive transfer of data, information, knowledge and experience with the construction procedures and materials.	Where it becomes necessary to change the EOR firm, jointly develop at initial engagement a detailed succession for the EOR that includes the comprehensive transfer of data, ownership of data, information, knowledge and experience with the construction procedures and materials.	As written, the plan is reactive and not proactive. The plan should be proactive and appropriate succession planning should be built into established governance documentation. It should be expected and is prudent to assume that the EoR would change with time.
16	Requirement 13.1	Educate personnel who have a role in the TMS about the reason for and importance of their job procedures for the prevention of a tailings facility failure.		This requirement is vague. The education of personnel is inherent to the tailing stewardship process and the tailing management plans. Specific guidance and requirements should be included.
16	Requirement 13.2	Incorporate workers' experience-based knowledge into planning for all stages of the tailings facility lifecycle.	Incorporate ~~workers'~~ construction, operation and maintenance experience-based knowledge into planning, and design for all stages of the tailings facility lifecycle.	This is a crucial and significant point. Many of the mining companies incorporate a siloed management system. The siloed structure does not lend itself well to the inherent demands created by proper tailing management practices and the observational approach. The engagement of construction experience, operations personnel experience, and maintenance experience is critically beneficial to the design process.
16	Requirement 13.3	Establish mechanisms that promote cross-functional collaboration to ensure data and knowledge integration and communication across the TMS and the ESMS.	Strike Paragraph 13.3	This requirement does not make sense. If integration and communication between the ESMS and TMS is required the requirement should be built into each of the definitions.

TOPIC V: EMERGENCY RESPONSE AND LONG-TERM RECOVERY

Page #	Reference	Draft Standard Wording	Comment, Question or Proposed Alternate Wording	Rationale for the change
18	Requirement 15.1	Prepare and implement a site-specific *Emergency Response Plan* (ERP) based on credible *tailings facility* failure scenarios and the assessment of potential consequences, using the knowledge base. Update regularly, including during closure.	Prepare and implement a site-specific *Emergency Response Plan* (ERP) based on credible *tailings facility* failure scenarios and the assessment of potential consequences, using the knowledge base. Update regularly, or after any significant changes, throughout the operation and closure periods.	ERP may need to be update after major changes to the TSF or downstream potential impact zone.
18	Requirement 15.4	Maintain a state of readiness at the mine site and within at-risk communities by training all appropriate personnel, *public sector agencies* , first responders and at-risk communities and by testing *emergency response plans* and procedures with all involved stakeholders.33	Include language for annual drills. Also consider early-warning systems, and evaluation of critical lifelines.	
	Requirement 15.x (new)		Inundation mapping should be conducted at an appropriate level, to determine potentially impacted persons or communities. Companies should develop internal standards for conducting inundation mapping, consistent with international standards.	Inundation mapping is very inconsistent between countries and between mining companies. CDA has been working on developing a reasonable methodology, based on the stage of the project (E.G. initial planning, final design, operations, etc.). This should be re-done periodically, particularly if the downstream impact zone become encroached upon (developed).
	Requirement 15.x (new)		Develop early warning systems, informed by the inundation mapping and flood arrival times. Develop evacuation routes, similar to tsunami early warning systems, and evaluate potential impacts to critical community lifelines.	Not sure if this belongs in Requirement 15.4, but the response plan should include early warning systems, developing evacuation routes, and consider critical community lifelines (highways, pipelines, water supply, etc.).
18	Principle 16	Prepare for long term recovery in the event of catastrophic failure.	Prepare for post-emergency recovery in the event of catastrophic failure.	Wording change to be more consistent with other sections.
18	Requirement 16.1	Meaningfully engage with public sector agencies and other organizations that would participate in medium- and long-term social and environmental post-failure response strategies.	Prepare Post-Emergency Disaster Recovery Strategies that include Operator commitments following a tailings dam failure, including: measures to assess social, economic and environmental impacts; potential reconstruction and recovery actions; and monitoring and reporting responsibilities. Meaningfully engage with public sector agencies and other organizations that would participate in post-emergency response strategies.	Document planned recovery strategies in the Emergency Preparedness and Response Plan.
19	Requirement 16.2	In the event of tailings facility disaster, assess social, economic and environmental disaster impacts as soon as possible after people are safe and short-term survival needs have been met.	Eliminate, as the proposed change to 16.1 (including Post-emergency recovery strategies in the ERP) can address this requirement.	
19	Requirement 16.3	Work with *public sector agencies* and other stakeholders to facilitate the development of a *Reconstruction and Recovery Plan* that addresses medium- and long- term social, economic and environmental impacts of a *tailings facility disaster* .	Develop medium- and long-terms plans to mitigate and/or restore impacted areas, working with downstream impacted persons, communities, and governmental authorities.	Evaluating long term impacts from the failure is potentially complex. Reference US Natural Damages Resource Assessment (Department of Interior, NOAA, EPA) for comparison. This may be a larger can of worms than was intended.

TOPIC VI: PUBLIC DISCLOSURE AND ACCESS TO INFORMATION

Page #	Reference	Draft Standard Wording	Comment, Question or Proposed Alternate Wording	Rationale for the change
20	Principle 17	Provide public access to information on tailings facility decisions, risks and impacts, management and mitigation plans, and performance monitoring.		
20	Requirement 17.1	Publicly disclose relevant data and information about the tailings facility and its consequence classification in order to fairly inform interested stakeholders.		

20	Requirement 17.2	Respond in a systematic and timely manner to all reasonable stakeholder requests for information about the tailings facility, to the fullest extent possible and to fairly inform the interested party making the request.		
20	Requirement 17.3	Commit to transparency and participate in credible global initiatives led by qualified independent organizations to create standardized, independent, industry- wide and publicly accessible databases, inventories or other information repositories about tailings facilities.		
20	Footnote 36	A fundamental principle that underlies the Standard is that the public is entitled to timely access to information relating to the tailings facility. This information must be made available at no charge, as soon as possible, and in one or more languages as necessary to afford adequate access to interested stakeholders.	A fundamental principle that underlies the Standard is that the public is entitled to timely access to information relating to the tailings facility. This information must be made available at no charge, as soon as possible, in the official language(s) of the State to afford adequate access to interested stakeholders.	It may not be practical for the disclosure to be made in the language preference of the party making the request.

ANNEX 1: GLOSSARY AND NOTES

Page #	Reference	Draft Standard Wording	Comment, Question or Proposed Alternate Wording	Rationale for the change
21	Best Practices	A procedure that has been shown by research and experience to produce optimal results and that is established or proposed as a standard suitable for widespread adoption. Merriam-Webster Unabridged Dictionary, available at, https://www.merriam-webster.com/diction- ary/best%20practice.	Procedures that are recognized by leaders in the profession, and preferably shown by research and experience to produce optimal results for conditions or parameters under consideration, and that are established or proposed as a standard suitable for widespread adoption. The Standard recognizes that there is no one “best practice” that can be viewed as applying to every tailings facility. Instead, there are a range of “best practices” that can apply to safely manage tailings facilities.	Need to recognize that some best practices tend to be endorsement by leaders in the profession, without documented research or experience, and produce "optimal" results for a range of conditions or parameters. The qualification wording presented in Footnote 2 applies to each instance of the use of the term "best practice". "tailing" replaced with "tailings" for consistency
22	Construction Records Report	Describes all aspects of the ‘as-built’ product, including all geometrical information, materials, laboratory and field test results, construction equipment and procedures, changes, non-conformances and their resolution, and construction photographs, amongst others.	Suggest adding: The report should include a detailed description of the foundation conditions including detailed geologic mapping with dip and strike measurements on the geologic discontinuities as well as descriptions of the soils and rocks exposed. Photographs of the foundation should be included in the report.	
23	Engineer of Record	The qualified engineer who responsible for confirming that the tailings facility is designed, constructed, operated, and decommissioned with appropriate concern for health, safety and the environment, and that it aligns with and meets applicable regulations, statutes, guidelines, codes, and standards (*after Site Characterization for Dam Foundations in BC, EGBC, 2016*). For more information, please refer to PRINCIPLE 12: Appoint and empower an Engineer of Record.	The qualified engineer who is responsible for confirming that the tailings facility is designed, constructed, operated, and closed with appropriate concern for health, safety and the environment, and that it aligns with and meets applicable regulations, statutes, guidelines, codes, and standards (*after Site Characterization for Dam Foundations in BC, EGBC, 2016*). For more information, please refer to PRINCIPLE 12: Appoint and empower an Engineer of Record.	For consistency replace "decommissioned" with "closed"
23	Engineer of Record	The qualified engineer who responsible for confirming that the tailings facility is designed, constructed, operated, and decommissioned with appropriate concern for health, safety and the environment, and that it aligns with and meets applicable regulations, statutes, guidelines, codes, and standards (after Site Characterization for Dam Foundations in BC, EGBC, 2016)	This covers a very broad range of technical disciplines. During design the Designer of Record relies on input for many different professionals that are outside the expertise of the Engineer of Record or Designer of Record. Do the engineers need to put their seal and signature on the reports, designs and drawings? If so, should a paragraph describing the limitations of the seal and signature be included?	
26	Robust Design	The robustness of a tailings facility depends on each particular situation and it may be associated with various aspects, for example, the factor of safety against each of the potential failure modes, the presence or absence of materials with brittle behaviour, the degree of brittleness of these materials, the degree of variability of the materials, the potential for thresholds of deformation that significantly affect the facility performance. The degree of robustness is related to the facility maintaining its overall integrity despite less than ideal performance of one or more of its components.	The robustness of a tailings facility depends on each particular situation and it may be associated with various aspects, for example, the factor of safety or probability against each of the potential failure modes, the presence or absence of materials with brittle behaviour, the degree of brittleness of these materials, the sensitivity of stability analyses to variability of the materials and tailings production/deposition rate, the potential for thresholds of deformation that significantly affect the facility performance. The degree of robustness is related to the facility maintaining its overall integrity despite less than ideal performance of one or more of its components. Robustness must also consider the surface water management, particularly at closure and relinquishment	Encourage probability analysis, and recognize the sensitivity of stability analysis to material variability and tailings production/deposition rate . This section needs to consider OVERTOPPING as a credible mode of failure in addition to the geotechnical discussion. For example, the incorporation of a spillway, even when undersized, would avert catastrophic failure and permit a perhaps more "elegant" failure with adequate risk mitigation.
26	Responsible Tailings Facility Engineer	An engineer appointed by the Operator to be responsible for the tailings facility. The RTFE must be available at all times during construction, operations and closure. The RTFE has clearly defined, delegated responsibility for management of the tailings facility and has appropriate qualifications compatible with the level of complexity of the tailings facility. The RTFE is responsible for the scope of work and budget requirements for the tailings facility, including risk management. The RTFE may delegate specific tasks and responsibilities for aspects of tailings management to qualified personnel.	Suggest adding a description of the necessary qualifications including but not necessarily limited to demonstrated capability by education, training and experience. Consider developing a tailing certification program for the RTFE. Does the RFTE necessarily required it be a degreed engineer? Could the requirements differ for differing size projects?	

27	Independent Tailings (or Technical?) Review Board	Provides independent technical review of the design, construction, operation and closure of tailings facilities. The expertise of the ITRB members relates to the specific technical aspects of the tailings facility site, material and design characteristics.	A group of 2 or more experts in tailings facility design, analysis, construction, operation and/or closure who provide ongoing independent technical review of the design, construction, operation and closure of tailings facilities. The expertise of the ITRB members relates to the specific technical aspects of the tailings facility site, material and design characteristics.	
27	Independent Expert Technical Reviewer (IETR)		A single expert with extensive experience in tailings facility design, construction, operation and closure who provides independent technical review, in lieu of a Board of experts, of the design, construction, operation and closure of tailings facilities. In general, the expertise and experience of a single reviewer should be at a higher level than required for all members of an ITRB. The IETR may require consultation from certain subject matter experts for which he/she is not specifically qualified to address.	I think I see where you're headed xxxx. Are we not on thin ice though - we could leave this to the governing bodies.....we are headed towards accreditation by MAC or the Institution of Professional Engineers. Just not sure that this particular body in crafting what are quite general guidelines will get into this in a way that is not more confusing than it is helpful. Lets keep talking.
27	Independent senior technical reviewer		An engineer, scientist, or other qualified professional who has sufficient experience in tailings facility design, evaluation, construction, operations, permitting, environmental management, social engagement or other relevant subjects that can perform independent reviews on one or more aspect of tailings management. Generally, the requirements of a senior technical reviewer are less stringent than required for an IETR or a member of an ITRB.	
27	Tailings Facility Lifecycle	The succession of phases in the life of a facility consisting of: project conception; initial construction; operation and ongoing construction; closure (including temporary closure, care & maintenance); post-closure (including relinquishment, reprocessing, relocation, removal)	The succession of phases in the life of a facility consisting of: project conception; initial construction; operation and ongoing construction; closure (including temporary closure, care & maintenance); post-closure (including relinquishment, reprocessing, relocation, removal). Permanent closure includes elimination of the excess surface water not required for treatment or cover systems ~~impounding capacity of the structure~~ and the conversion to a mine waste containment structure, with transition to post-closure and a state where Potential Failure Mode Analysis and if required deformation analysis demonstrate that potential failure modes do not impact downstream conditions.	Recommend working on further definition of closure and post-closure lifecycle states, and principle for "relinquishment" from a dam safety perspective to revise Requirement 5.6 and others. It is worth stressing that using the "closed TSF" as a reservoir for excess mine water or site water is not compatible with the concept of "closed". If the TSF is indeed repurposed for a different use that is a totally different case and needs to be managed accordingly.
	Quality Control, Quality Assurance, Construction vs Design Intent Verification			Add definitions and include the provision for implementation plans and results reporting for consistency with Requirement 7.2
	Potential Failure Modes Analysis		Based on Failure Modes and Effects Analysis (FMEA) to evaluate the development and failure of system or equipment components, Potential Failure Modes Analysis (PFMA) is a structured process to evaluate loadings and responses of dams considering modes of failure and consequences, identifying factors affecting performance, parameters to be monitored, and potential risk reduction measures.	Add definition or change proposed text to reference FMEA or FMECA. Suggest just referring to FMEA only, and citing a paper or reference where the method is described - USSD, USBR or CDA?

ANNEX 2: CONSEQUENCE CLASSIFICATION

Page #	Reference	Draft Standard Wording	Comment, Question or Proposed Alternate Wording	Rationale for the change
32	Table 2	External loading criteria required by the Standard - Dam Failure Consequence Classification - Design Flood - Design Ground Motion	Delete Table 2	Considering limitations in establishing these criteria for a Standard applicable to all regions and conditions, this document should indicate that appropriate and referenceable design criteria shall be adopted considering the Consequence Classification, without citing specific values. In other words, we do not recommend including the flood and earthquake design criteria in this document, but rather including them in a supporting technical guidance document.
		High - 1/5000 - 1/5000		
		Very High - 1/5000 - 1/5000		
		Extreme - 1/10,000 or PMF - 1/10,000 or MCE		

SME Additional Commentary of the Draft Tailings Standard, 23 December 2019

General

There should be a structure or avenue for periodically reassessing and/or amending the Standard when realities change, or its wording is being misinterpreted or misused by any group.

Topic I: KNOWLEDGE BASE

Requirement 1.1 (Page 6): refers to knowledge aligned with international best practice. As noted in the comments on the Glossary, the notion of international "best practice" is vague and the Standard will benefit from a more precise definition.

TOPIC III: DESIGN, CONSTRUCTION, OPERATION AND MONITORING OF THE TAILINGS FACILITY

Requirement 7.3 (Page 12): "Prepare a detailed Construction Records Report at least annually or whenever there is any material change to the tailings facility, its infrastructure or its monitoring system."

TOPIC V: EMERGENCY RESPONSE AND LONG-TERM RECOVERY

Requirement 15.2 provides for meaningful engagement with the public and at-risk communities for emergency planning and implementation. Consistent with our comments regarding public disclosure, the section should be qualified noting disclosure should not include material that would present a risk to operational or physical security.

TOPIC VI: PUBLIC DISCLOSURE AND ACCESS TO INFORMATION

Public disclosure of certain information may be contrary to the overall goal of eliminating catastrophic dam failures. As expressed in a report to Congress entitled "Dam Safety Overview and the Federal Role" (Oct. 24, 2019): "*Following terrorist attacks on September 11, 2001, the Federal Government focused on dam security and the potential for acts of terrorism at major dam sites ... As a consequence of the September 11, 2001, terrorist attacks, current federal policy and practices restrict public access to most information related to the condition assessment of dams and consequences of dam or component failure. For example, according to USACE, dams in the NID meet the definition of critical infrastructure as defined by the Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism (USA PATRIOT) Act of 2001 (P.L. 107-56). Vulnerability assessments of critical infrastructure are restricted from public access*." See p. 36.

It is important for the Standard to recognize that catastrophic failures of tailings dams may also be caused by intentional actions, and public access to certain information could do more harm than good. Footnote 38 in

the Standard recognizes: "Public disclosure should exclude confidential financial and business information or where disclosure would present a risk to operational or physical security."

In the U.S., government agencies play an important role as a gatekeeper for potentially sensitive information regarding dam vulnerabilities and impacts. There are established processes for obtaining information available to the public and processes for protecting information when disclosure is not in the public interest.

Footnote 36 (Page 20): "A fundamental principle that underlies the Standard is that the public is entitled to timely access to information relating to the tailings facility. This information must be made available at no charge, as soon as possible, and in one or more languages as necessary to afford adequate access to interested stakeholders. Sensitive information for which public disclosure may present a risk to operational or physical security may be submitted to a government agency with a process for establishing whether disclosure of the information is in the public interest."

Requirement 17.2 (Page 20): "Respond in a systematic and timely manner to all reasonable stakeholder requests for information about the tailings facility, including, where appropriate, directing stakeholders to regulatory agencies where such information is kept and disseminated in accordance with the public interest."

Requirement 17.3 requires a commitment to global initiatives to make tailings information publicly accessible. We are concerned that this bypasses the important role that government agencies serve in protecting the public interest in the U.S., including restricting access where disclosure would present a risk to operational or physical security. Therefore, we suggest that the Standard delete Requirement 17.3.

We are concerned about the breadth of **Footnote 37** that requires disclosure of a minimum of information by citing to multiple other requirements throughout the draft Standard. The minimum information should exclude any sections that may generate information excluded under Footnote 38. We suggest that this Footnote exclude sections 1.3; 4.3; 11.1; 11.4 and perhaps others that may contain information the disclosure of which is contrary to the public interest.

ANNEX 1: Glossary

"**Best practices**" In the United States, regulatory agencies with jurisdiction over tailings facilities have an obligation to protect the public interest. They are in a unique position to collect information across multiple facilities from which best practices can be distilled. These agencies also have rule-making processes designed to collect stakeholder perspectives through public comment and generate reasoned decisions regarding the best practices that are necessary and appropriate to protect the public. For the Global Tailings Standard, "best practices" should be defined as the best of the practices adopted by regulatory agencies with the resources and knowledge to identify, and periodically review, industry practices for operating tailings facilities to protect the public interest.