Consultation response

Part 1: Your details

Original language of response: English

Name: Robert Gordon

Country of residence: Canada

Are you willing to let us publish your response publicly on the Global Tailings Review website? Yes

Please select which stakeholder group you are representing: Consultant (geotechnical)

If 'Other', please specify below:

Are you responding on behalf of an organization? No

Please give the name of the organization:

Your level within the organisation:

Part 2: Your views on each of the Principles and Requirements in the Standard

Topic I: Knowledge Base

Principle 1

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?
Yes

Which aspects of Principle 1 do your comments relate to?
Requirement 1.3

Your comments on Principle 1
My sense is that ground water flow and potential leakage is a critical component of this. Traditional means of monitoring is not thorough. Technologies are available for measuring and sensing deep resistivity to depths of surface to 1000 metres. Todate, companies have not utilised these exploration technologies to provide this information/ knowledge. This data can be collected in longterm 4D.

Principle 2

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?
Yes

Which aspects of Principle 2 do your comments relate to?
Requirement 2.1

Your comments on Principle 2
Facilities design should include appropriate deep 3D resistivity information. This technology exists today. Yet, the geophysical community that works around minesites only is familiar with shallow technologies. Deep resistivity can map faults/ water etc to depth from surface to 2 km. in 3D. Starting plans should incorporate these sophisticated technologies.

Topic II: Affected Communities

Principle 3

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?
Yes

Which aspects of Principle 3 do your comments relate to?

Your comments on Principle 3

Topic III: Design, Construction, Operation and Monitoring of the Tailings Facility

Principle 4

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?
Yes

Which aspects of Principle 4 do your comments relate to?
Comments on the Principle itself

Your comments on Principle 4
The principle of design should include all pertinent information that can be acquired. Current standard of information is low compared to what is available to acquire. For example, when a discovery is first made, drilling is focused on the discovery and delineation is carried out. When mine plans are required, the mining engineers work with what they are used to. They may request some additional drilling for condemnation, or for tailings planning. However, many aspects of the subsurface that can pose extreme risk, such as undected clay layers, below dams, water pathways (such as faults) weakness planes shuch as shears and faults cannot be accurately dleineated by drilling alone. Insome cases deep structures may contribute to '"'extreme'"' risk. Geophysics (excepting seismics) is rarely considered as a tool to provide deep mapping. This is an accident of the industry because , geophysicists are under represented in the mining arena. They mostly focus on exploration and therefore are not at the table for knowledge base. Deep 3D cubes of information can be collected over the course of as little time as 1 month covering a volume of information to depths of 2km. This information can be extremely critical to the planning stage. For water detection/ fault mapping/ clay layer detection etc. (cost is nominal at this stage as well. < 1 M)

Principle 5

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?
Yes

Which aspects of Principle 5 do your comments relate to?
Comments on the Principle itself

Your comments on Principle 5
My last comment also applies here. In particular deep '"'minesite imaging'"' can be applied at the feasibility stage of the project.

Principle 6

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?
Yes

Which aspects of Principle 6 do your comments relate to?
Comments on the Principle itself

Your comments on Principle 6:
It is critical that any plan for structural design must rely on a foundation that is well understood. Resistivity mapping is probably one of the most under utilised technology in the whole process of mine design.

Principle 7

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?
Yes

Which aspects of Principle 7 do your comments relate to?
Comments on the Principle itself

Your comments on Principle 7
Taking snapshots of deep (0-1000m) resistivity provides a time based monitoring application of deep geophysics. This can provide an additional check in conjunction with other monitoring techniques. It has an advantage in that it is non invasive. Surface surveys can be repeated on the boundaries of all tailings facilities to detect changes in the resistivity patterns, that may be related to flow of effluent material (tailings materials are typically conductive and can be readilly mapped if they are moving)

Principle 8

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?
Yes

Which aspects of Principle 8 do your comments relate to?
Requirement 8.2

Your comments on Principle 8
Consider resistivity monitoring as a critical criteria

Topic IV: Management and Governance

Principle 9

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?
Yes

Which aspects of Principle 9 do your comments relate to?

Your comments on Principle 9

Principle 10

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?
Yes

Which aspects of Principle 10 do your comments relate to?

Your comments on Principle 10:

Principle 11

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?
Yes

Which aspects of Principle 11 do your comments relate to?
Requirement 11.1

Your comments on Principle 11:
Geophysics needs to be part of the multidisciplinary team

Principle 12

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?
Yes

Which aspects of Principle 12 do your comments relate to?
Requirement 12.1

Your comments on Principle 12:
Not many engineering firms have experienced geophysicists on board. Many mining engineers do not even know what geophysics is.

Principle 13

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?
Yes

Which aspects of Principle 13 do your comments relate to?
No

Your comments on Principle 13:

Principle 14

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?
Yes

Which aspects of Principle 14 do your comments relate to?

Your comments on Principle 14:

Topic V: Emergency Response and Long-Term Recovery

Principle 15

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?
Yes

Which aspects of Principle 15 do your comments relate to?

Your comments on Principle 15:

Principle 16

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?
Yes

Which aspects of Principle 16 do your comments relate to?

Your comments on Principle 16:

Topic VI: Public Disclosure and Access to Information

Principle 17

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?
Not sure

Which aspects of Principle 17 do your comments relate to?

Your comments on Principle 17:

Part 3: Your views on the Standard

Your view as to whether the content of the Standard meets your expectations

Your view as to whether the content of the Standard meets your expectations (closed question):
3: Meets my expectations

Please summarize why you chose this option:
As an Engineering Geophysicist, my exposure to Mine tailings has been limited. It seems if these standards help various oversight groups and concerned team members associated with the main issues realise the importance of multidisciplinary and cross organisation information to the whole.

Your view on whether the Standard will create a step change for the industry in the safety and security of tailings facilities

Your view on whether the Standard will create a step change for the industry in the safety and security of tailings facilities (closed question):
5: Will deliver a step change in all aspects of the safety and security of tailings facilities

Please summarize why you chose this option:
It could deliver a step change. Certainly in the area of mine planning.

Does the content of the Standard address all aspects of tailings facility management adequately?

Does the content of the Standard address all aspects of tailings facility management adequately (closed question)?
No

Please explain why and/or what is missing:
It seems like the issue of longterm tailings management needs some more information. Tailings can and will sit for 100's of years. Design and planning should include the long look approach as well. I am not sure if the standards do.

Part 4: Suggestions for topics to be included in the accompanying Recommendations Report

On which topics would you expect to have further clarification or guidance in this document?
I would obviously like to see ""best practise "" approach include deep minesite imaging as a requisite for all mine plans. i.e. deep 3D resistivity imaging.

Other information

Non-fitting response text (text submitted which did was not in response to one of the questions above)

Attachment 1 reference (if applicable)

ref:0000000074:Q83

Attachment 2 reference (if applicable)