

REVISIONS TO PART 10 EFFECTIVE AS OF JULY 20, 2016

SCHEDULE

- 1 Part 10 of the Health, Safety and Reclamation Code for Mines in British Columbia is repealed and the following is substituted:*

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Definitions

“*best available technology*” means the site specific combination of technologies and techniques that most effectively reduce the physical, geochemical, ecological and social risks associated with tailings storage during all stages of operation and closure.

“*dam*” means a barrier on the surface preventing uncontrolled release of either water, slurry or solids or a barrier underground to prevent the uncontrolled flow of water, slurry or solids.

“*dump or stockpile*” means the accumulation of deposited rock fragments or other unconsolidated material

“*engineer of record*” means the Professional Engineer who is retained under section 10.1.5 (1) of this code.

“*environmental design flood*” means the hydrological event that is to be managed without release of untreated water to the environment.

“*fill*” means a deposit of discrete particles, either loose or well-compacted, placed in layers or dumped into a ravine, valley, or depression.

“*HSRC Guidance Document*” means the guidance document prepared by the chief inspector in consultation with the health safety and reclamation code committee for the purposes of this code.

“*impoundment*” means a body of water, slurry or solids that is confined by natural barriers or constructed dams and includes those barriers, dams and related items.

“*inflow design flood*” means the flood into the impoundment resulting from the design hydrologic event.

“*land capability*” means the capability of achieving a specified land use estimated by limitations as a result of climate, topography and soils.

“*landform*” means a designated structure that can be considered to have a risk profile similar to the surrounding environment.

“*major dump*” means a dump that contains a volume of dumped material that exceeds one million cubic metres, or has a dump height greater than 50 metres, or has an area that is covered by a dump that exceeds one hectare, or is founded upon natural or trimmed slopes that are sometimes steeper than 20 degrees from a horizontal plane, or contains material dumped or placed in a water course having a potential peak flow greater than one cubic metre per second, once in every 200 years, or any other mine dumps so declared the chief inspector.

“*overburden*” means all unconsolidated naturally occurring material overlying bedrock.

“*permit*” means a permit issued pursuant to section 10 (3) of the *Mines Act*.

“*probable maximum flood*” means the hypothetical most severe flood that may credibly be expected to occur at a particular location resulting from the seasonal maximum combination of precipitation and snowmelt.

“*qualified professional*” means an individual who

- (a) is registered, and in good standing, with a professional organization in British Columbia governed under an enactment, and
- (b) is acting within his or her area of professional expertise.

“*quantifiable performance objectives*” means measureable monitoring parameters that are identified and required to be maintained within predetermined limits for tailings storage facility safety.

“*surficial soil material*” means those soils commonly contained in the upper layers of the overburden mass, which are suitable for use in reclamation, either as growth medium, soil covers and seals, or other reclamation requirements.

“*tailings*” means the residue remaining from the preparation of a concentrate of minerals or coal.

“*tailings storage facility*” or “*TSF*” means a facility that stores tailings.

“*TSF qualified person*” means the person designated under section 10.4.2 (1) (b) of this code.

“*watercourse*” means a natural stream or source of water, whether usually containing water or not, and includes any lake, river, creek, spring, ravine, swamp, and gulch.

Mine Plan and Reclamation Program Information

Proposed Placer Mines, Gravel Pits and Quarries

- 10.1.1** (1) The proposed mine plan and reclamation program filed with the inspector in compliance with section 10 (1) of the *Mines Act*, shall consist of the appropriate Notice of Work forms together with such other information as the inspector may require, for approval of placer mining, sand and gravel pits, rock quarries and industrial mineral quarries.
- (2) No work shall proceed without the inspector granting a permit or authorization or the chief inspector granting an exemption under section 10 (2) of the *Mines Act*.

Proposed Coal and Mineral Mines, Major Modifications to Existing Mines & Major Exploration and Development

Permit Application

- 10.1.2** (1) The owner, agent or manager shall submit in writing, an application to the chief inspector for a permit under section 10 (1) of the *Mines Act* for
- (a) surface or underground development or production for coal and mineral mines, or major expansions or major modifications of existing producing coal and mineral mines, or
 - (b) underground exploration requiring excavation, large pilot projects, bulk samples, trial cargos or test shipments.
- (2) No work shall proceed without the chief inspector granting a permit or authorization.
- (3) The chief inspector shall determine the number of copies of the application required.

Application Requirements

- 10.1.3** The application shall include the following unless otherwise authorized by the chief inspector:
- (a) a regional map showing the location of the mine property, along with a map or air photo showing the location and extent of the mine;

- (b) the present use and condition of the land and watercourses including
 - (i) land ownership, including surface and mineral rights, licensed or permitted users such as water users, guides, outfitters, trappers and grazing licenses,
 - (ii) climate,
 - (iii) general geology and detailed geological descriptions of the deposit,
 - (iv) surface water and groundwater quality and flow,
 - (v) fisheries and aquatic resources,
 - (vi) air quality,
 - (vii) surficial geology and terrain mapping,
 - (viii) soil survey and soil characterization,
 - (ix) vegetation,
 - (x) wildlife,
 - (xi) land capability and present land uses such as agriculture, forestry, fisheries, wildlife, recreation, industrial, commercial and residential, and
 - (xi) inhabited places in the vicinity of the mine;
- (c) established and asserted aboriginal and treaty rights;
- (d) a mine plan including
 - (i) a map at a scale of 1:10,000 or less showing topographic contours, surface drainage features, claims, leases or licences, buildings, roads, railways, power transmission lines, pipelines, and other relevant features and the locations of all proposed or existing surface and underground mining developments, waste disposal areas, stockpiles, processing facilities, mine buildings and other mining related disturbances or infrastructure,
 - (ii) an inventory of areas disturbed to date, and projected over the next 5 years and over the projected life of the mine,
 - (iii) descriptions of mining methods, mining rates, projected mine life, processing methods and infrastructure requirements,
 - (iv) development schedule for construction and mine sequencing,
 - (v) detailed geology and ore reserves, and projected volumes of ore and waste to be produced and relative time of production,
 - (vi) designs and details for dumps, open pits, impoundments, underground workings including areas that may be affected by subsidence, stockpiles, processing facilities, water management structures, water storage and water treatment facilities, haulage roads, road construction and significant transportation or utilities infrastructure, compatible with environmental protection, reclamation and mine closure,

- (vii) designs and details for tailings storage and a description of proposed quantifiable performance objectives,
 - (viii) designs for material handling and waste disposal procedures,
 - (ix) salvaging and stockpiling of surface soils and overburden materials,
 - (x) source, use and water balance for any water required in the operation,
 - (xi) overall site water balance, and
 - (xii) a traffic control procedure as required under section 6.8.3 of this code.
- (e) a program for the environmental protection of land and watercourses during the construction and operational phases of the mining operation, including plans for
- (i) prediction, identification and management of physical, chemical, and other risks associated with tailings storage facilities and dams,
 - (ii) prediction, and if necessary, prevention, mitigation and management of metal leaching and acid rock drainage,
 - (iii) erosion control and sediment retention, and
 - (iv) environmental monitoring and surveillance designed to demonstrate that
 - (A) the objectives of section 10.5.1 of this code are being met,
 - (B) the reclamation standards as outlined in section 10.7 of this code are being met, and
 - (C) environmental protection of land and watercourses required under paragraph (f) (i) and (ii) of this section are being achieved and maintained,
- (f) an alternatives assessment for the proposed tailings storage facilities that assesses best available technology,
- (g) a conceptual reclamation plan for the closure or abandonment of all aspects of the mining operation, including
- (i) plans for long term post-closure maintenance of facilities,
 - (ii) proposed use and capability objectives for the land and watercourses, and
- (h) a closure plan for the tailings storage facility,
- (i) an estimate of the total expected costs of outstanding reclamation obligations over the planned life of the mine, including the costs of long term monitoring and maintenance which, with the approval of the chief inspector, may be filed in a separate confidential report, and
 - (j) any other relevant information required by the chief inspector.

Design Standards

- 10.1.4** (1) Impoundments, tailings storage facilities and water management facilities and dams shall be designed by a Professional Engineer.
- (2) The Professional Engineer shall develop design criteria for each facility referred to in subsection (1) that considers the HSRC Guidance Document.
- (3) Site characterizations for support of the design of a tailings storage facility or dam shall be carried out by a Professional Engineer and in consideration of the HSRC Guidance Document.

Engineer of Record

- 10.1.5** (1) The manager shall ensure that a Professional Engineer is retained as the engineer of record for each tailings storage facility and dam under their management.
- (2) The engineer of record, as a qualified professional, has professional responsibility for assuring that a tailings storage facility or dam has been designed and constructed in accordance with the applicable guidelines, standards and regulations.
- (3) The manager shall notify the chief inspector of the retained engineer of record, of changes in the engineer of record, and the notification shall include an acknowledgement by the engineer of record.

Duty to Report Safety Issues at Tailings Storage Facilities

- 10.1.6** (1) The engineer of record shall immediately notify the manager in writing of any unresolved safety issue that compromises the integrity of a tailings storage facility.
- (2) If the engineer of record and manager are unable to resolve the safety issue, the manager must report the issue to the chief inspector and provide a copy of the report to the engineer of record.
- (3) If the manager does not provide the report under subsection (2) in a timely fashion, the engineer of record shall report the issue to the chief inspector.

Consequence Classification

- 10.1.7** The consequence classification for a tailings storage facility shall be determined by the engineer of record in consideration of the HSRC Guidance Document.

Seismic and Flood Design Criteria

- 10.1.8** (1) Seismic and flood design criteria for tailings storage facilities and dams shall be determined by the engineer of record based on the consequence classification determined under section 10.1.7 of this code in consideration of the HSRC Guidance Document, subject to the following criteria:
- (a) for tailings storage facilities that store water or saturated tailings,

- (i) the minimum seismic design criteria shall be a return period of 1 in 2475 years,
 - (ii) the minimum flood design criteria shall be a return period 1/3rd of the way between the 1 in 975-year event and the probable maximum flood, and
 - (iii) a facility that stores the inflow design flood shall use a minimum design event duration of 72 hours;
- (b) for tailings storage facilities that cannot retain water or saturated tailings,
- (i) the minimum seismic design criteria shall be a return period of 1 in 975 years, and
 - (ii) the water management design shall include an assessment of tailings facility erosion and surface water diversions as well as measures to prevent impounded tailings from becoming saturated that consider the consequence classification as determined under section 10.1.7 of this code.
- (2) The environmental design flood criteria shall be determined by a Professional Engineer in consultation with other qualified professionals.

Design Slopes

10.1.9 For a tailings storage facility design that has an overall downstream slope steeper than 2H:1V, the manager shall submit justification by the engineer of record for the selected design slope and receive authorization by the chief inspector prior to construction.

Minimum Static Factor of Safety

10.1.10 For a tailings storage facility design that has a calculated static factor of safety of less than 1.5, the manager shall submit justification by the engineer of record for the selected factor of safety and receive authorization by the chief inspector prior to construction.

Breach and Inundation Study/Failure Runout Assessment

10.1.11 A tailings storage facility shall have a breach and inundation study or a failure runout assessment prior to commencing operation, or as required by the chief inspector.

Water Balance and Water Management Plan

- 10.1.12**
- (1) The manager shall ensure that a tailings storage facility has a water balance and water management plan for the permitted life of mine that is prepared by a qualified person.
 - (2) The manager shall notify the chief inspector if any unpermitted discharge of water occurs or is required.

Quantifiable Performance Objectives

10.1.13 The manager shall ensure that quantifiable performance objectives for a tailings storage facility are determined and reviewed by the engineer of record and the TSF qualified person.

Underground Openings and Workings

- 10.1.14** (1) Tailings storage facility designs that use underground openings shall comply with 6.14.1 of this code.
- (2) Tailings storage facility designs shall consider the potential effects on and interactions with underground workings.

Major Dumps

- 10.1.15** A major dump shall be designed
- (a) in consideration of the Interim Guidelines of the British Columbia Mine Waste Rock Pile Research Committee, and
 - (b) so as to allow for re-contouring such that final reclamation is consistent with the approved end land use.

Metal Leaching and Acid Rock Drainage

10.1.16 Plans for the prediction, and if necessary, the prevention, mitigation and management of metal leaching and acid rock drainage shall be prepared in consideration of the Guidelines for Metal Leaching and Acid Rock Drainage at Mine sites in British Columbia.

Preparation of Plans and Programs

- 10.1.17** Mine, environmental protection, reclamation and closure plans required under sections 10.1.1, 10.1.3, 10.1.16 and 10.6.3 of this code shall
- (a) be prepared taking into consideration the health and safety of the public and persons involved in the work,
 - (b) be designed so as to make it as practicable as possible in the future to mine zones affected by the plan,
 - (c) be designed to protect the land and watercourses, and
 - (d) be prepared in consideration of the HSRC Guidance Document, by qualified professionals or persons who in the opinion of the chief inspector are qualified to perform the work.

Departure from Approval

10.1.18 The owner, agent or manager shall notify the chief inspector in writing of any intention to depart from the mine plan and reclamation program authorized under sections 10.1.1 or 10.1.3 of this code to any substantial degree, and shall not proceed to implement the proposed changes without the written authorization of the chief inspector.

Exceptions

- 10.1.19** (1) Sections 10.1.2 through 10.1.17 of this code do not apply to placer mines, sand and gravel pits, and quarries unless required by the chief inspector
- (2) Sections 10.1.8, 10.1.9 and 10.1.10 of this code do not apply to mines with respect to which the chief inspector has received an application for a permit before the date on which this subsection comes into force.

Notice of Filing

Publication

- 10.2.1** When required by an inspector, notice of filing an application under section 10 (1) of the *Mines Act* shall be published, by the person filing it, in the Gazette and in local newspapers.

Written Response

- 10.2.2** Where a notice of filing has been published under section 10.2.1 of this code, a person affected by, or interested in, the application has 30 days after the last date on which the notice was published to view the application and make written representations to the chief inspector.

Referral of Permit Application to Other Agencies

Mine Development Review Committee

- 10.3.1** (1) The chief inspector may refer to the advisory committee or the regional advisory committee established pursuant to section 9 of the *Mines Act*, applications submitted under section 10.1.2 of this code and may, where the chief inspector considers it to be appropriate, refer any Notice of Work submitted under section 10.1.1 of this code.
- (2) The advisory committee or regional advisory committee shall review every application referred to them and make recommendations to the chief inspector within 60 days following application.
- (3) If no recommendations under subsection (2) have been received within 60 days, the chief inspector will deem that there are no concerns.

Circulation of Application

- 10.3.2** (1) If a permit application under section 10.1.1 of this code is not referred to a committee for review under section 10.3.1, an inspector may circulate it to other ministries and agencies and they will have 30 days following referral to make written representations to the inspector.
- (2) If no written representations have been received within 30 days, the inspector will deem that there are no concerns.

Permit

- 10.3.3** A permit issued under section 10 (1) of the *Mines Act* shall take into consideration
- (a) any written representations received under section 10.2.2 of this code,
 - (b) any recommendations made by a committee under section 10.3.1 of this code, and
 - (c) any written representations received under section 10.3.2 of this code.

Permitted Sites

Updated Plans

- 10.4.1**
- (1) After commencement of operations, mine plans, including programs for reclamation and closure, shall be updated, at a minimum, every 5 years.
 - (2) Reclamation plans shall outline progressive reclamation activities for the 5 years following the date on which the plans are updated in accordance with subsection (1).
 - (3) After commencement of operations, the water balance and water management plans under section 10.1.12 of this code shall be reconciled annually and updated as required.

Governance

- 10.4.2**
- (1) The manager of a mine with one or more tailings storage facilities shall
 - (a) develop and maintain a Tailings Management System that considers the HSRC Guidance Document and includes regular system audits,
 - (b) designate a TSF qualified person for safe management of all Tailings Storage Facilities,
 - (c) establish an Independent Tailings Review Board, unless exempted by the chief inspector,
 - (d) review annually the tailings storage facility risk assessment to ensure that the quantifiable performance objectives and operating controls are current and manage the facility risks,
 - (e) maintain tailings storage facility emergency preparedness and response plans integrated into the Mine Emergency Response Plan required under section 3.7.1 of this code, and
 - (f) ensure document records for key information are maintained and readily available for tailings storage facilities.
 - (2) The composition of an Independent Tailings Review Board established under subsection (1) (c) shall be commensurate with the complexity of the tailings storage facility in consideration of the HSRC Guidance Document.
 - (3) The manager shall submit the terms of reference for the Independent Tailings Review Board including the qualifications of the board members to the chief inspector for approval.

- (4) The terms of reference for the Independent Tailings Review Board shall be developed or updated as required in consideration of the review under subsection (1) (d).

Register of Tailings Storage Facilities and Dams

- 10.4.3** (1) The manager of a mine with one or more tailings storage facilities shall maintain a Register of Tailings Storage Facilities and Dams.
- (2) The register shall be reviewed and updated at least annually.

Annual Reporting

- 10.4.4** The owner, agent or manager shall submit one or more annual reports in a summary form specified by the chief inspector or by the conditions of the permit by March 31 of the following year on the following:

- (a) reclamation and environmental monitoring work performed under section 10.1.3 (e) of this code;
- (b) tailings storage facility and dam safety inspections performed under section 10.5.3 of this code;
- (c) a report of the activities of the Independent Tailings Review Board established under section 10.4.2 (1) (c) of this code that describes the following:
 - (i) a summary of the reviews conducted that year, including the number of meetings and attendees;
 - (ii) whether the work reviewed that year meets the Board's expectations of reasonably good practice;
 - (iii) any conditions that compromise tailings storage facility integrity or occurrences of non-compliance with recommendations from the engineer of record;
 - (iv) signed acknowledgement by the members of the Board, confirming that the report is a true and accurate representation of their reviews;
- (d) a summary of tailings storage facility and dam safety recommendations including a scheduled completion date;
- (e) performance of high-risk dumps under section 10.5.5 of this code;
- (f) updates to the tailings storage facilities register as required;
- (g) other information as directed by the chief inspector.

Other Reporting

- 10.4.5** The owner, agent or manager shall submit the following periodic reports with the annual reporting in a form specified by the chief inspector or by the conditions of the permit by March 31 of the year following their completion:
- (a) mine plan, reclamation plan and closure plan updates under section 10.4.1 of this code;

- (b) dam safety review reports performed under section 10.5.4 of this code;
- (c) “as built” reports for tailings storage facilities and dams under section 10.5.1 of this code.

Operations

Construction of Tailings and Water Management Facilities

- 10.5.1**
- (1) The manager shall submit issued for construction drawings, specifications and quality assurance/quality control plans as well as a summary construction schedule to the chief inspector prior to commencing construction of a tailings storage or water management facility.
 - (2) The manager shall ensure that the initial operation of a tailings storage or water storage facility does not commence until an "as built" report under subsection (3) certifying that the facility was designed in accordance with this code and constructed according to design has been submitted to the chief inspector and a permit has been received.
 - (3) The manager shall prepare “as built” reports for each stage of construction of a tailings storage or water storage facility that include, as a minimum, the following:
 - (a) geotechnical foundation conditions;
 - (b) geometry;
 - (c) quality assurance/quality control data prepared by a Professional Engineer.
 - (4) The manager shall ensure that the engineer of record has certified that the tailings storage facility or dam has been constructed in a manner consistent with the design and specifications and that the structures are suitable for the intended use.

Operations, Maintenance and Surveillance (OMS) Manual

- 10.5.2**
- (1) An Operations, Maintenance and Surveillance Manual shall be prepared by one or more qualified person and submitted to the chief inspector prior to operation of the Tailings Storage Facility or dam.
 - (2) The Operations, Maintenance and Surveillance Manual shall be reviewed by the engineer of record and approved by the manager prior to implementation.
 - (3) All employees involved in the operation of a tailings storage facility or dam shall be trained and qualified, based on the OMS requirements, prior to commencing work at the facility.
 - (4) The Operations, Maintenance and Surveillance Manual shall be reviewed annually and revised as required during operations of a tailings storage facility or dam.

Annual Dam Safety Inspection

10.5.3 Tailings storage and water management facilities and associated dams shall be inspected annually and a report shall be prepared by the engineer of record in consideration of the HSRC Guidance Document

Dam Safety Reviews

10.5.4 A Dam Safety Review Report on the tailings storage, water management facilities and associated dams shall be prepared by an independent Professional Engineer in consideration of the HSRC Guidance Document at least every 5 years or as directed by the chief inspector.

Major Dumps

10.5.5 Major dumps shall be operated and monitored in accordance with the Interim Guidelines of the British Columbia Mine Waste Rock Pile Research Committee

Spontaneous combustible material

10.5.6 Material with a high probability of spontaneous combustion shall be placed in a separate dump.

Materials Inventory

10.5.7 (1) Where required for the control of metal leaching and acid rock drainage, the owner, agent or manager shall maintain an inventory of identified material that includes

- (a) composition, mass, volume, surface area, and storage locations,
- (b) history and timing of excavation,
- (c) monitoring data, and
- (d) any other information required by the chief inspector.

(2) Upon closure, the manager shall submit the material inventory to the chief inspector.

Excavations Near Property Boundaries

10.5.8 The excavation of soil material such as clay, silt, earth, sand or gravel, in a surface mine shall not be carried on within a setback distance of at least 5 metres horizontal from the vertical plane of the property boundary, and

- (a) there shall be no excavation of soil material below a surface sloping downwards into the property from the inside edge of the setback no steeper than 1.5 horizontal to 1 vertical, and
- (b) material that sloughs from within this distance shall not be removed without the written approval of the inspector.

Excavation before April 1, 1997

10.5.9 The chief inspector may direct that any excavation that exists in soil materials on or before April 1, 1997 will not be considered to be out of compliance for not meeting

setback requirements providing that all further excavation is conducted in a manner consistent with the requirements of section 10.5.8 of this code.

Alternative setbacks and slopes

10.5.10 Notwithstanding sections 10.5.8 and 10.5.9 of this code, the chief inspector may approve a mine plan, prepared by a Professional Engineer, with alternative setbacks and slopes that ensure that the property boundary will be adequately protected.

Rock excavation

10.5.11 Rock shall not be excavated within a distance of 5 m from the property boundary.

Waiver by adjoining property owners

10.5.12 The owners of adjoining properties may, by agreement in writing, waive the provisions of sections 10.5.8, 10.5.9 and 10.5.11 of this code.

Mine Closure

Notice Required

10.6.1 The owner, agent, or manager shall provide written notice of not less than 7 days to an inspector of intention to stop work in, on, or about a mine.

Cessation of operations

- 10.6.2**
- (1) If a mine ceases operation, the owner, agent, or manager shall
 - (a) continue to carry out the conditions of the permit, and
 - (b) carry out a program of site monitoring and maintenance.
 - (2) If a mine ceases operation for a period longer than one year, the owner, agent, or manager shall
 - (a) apply for an amendment to the permit setting out a revised program for approval by an inspector,
 - (b) identify the hazards and provide detailed engineered plans and drawings respecting the hazards to local emergency agencies, and update the drawings as required, and
 - (c) if practicable, make the plans and drawings available on site in a conspicuous location.

Filing of Plans

- 10.6.3**
- (1) On the closure of a mine, the owner, agent or manager shall, within 90 days, file with the chief inspector accurate drawings, on a scale consistent with good engineering practice, showing
 - (a) on a plan view
 - (i) the surface and underground workings of the mine up to the time of closure and the boundaries of the mineral claims, licenses, or leases in which the workings are situated, and

- (ii) identification of underground workings that come to within 25 meters of the surface,
 - (b) a general long section and several cross section views of the surface and underground mine workings, and
 - (c) any other plans that may be requested by the chief inspector.
- (2) The filed plans shall be preserved as a permanent record in the office of the chief inspector.

Securing of Openings

10.6.4 When a mine is closed for an indefinite period, or otherwise left unattended for any length of time, the owner, agent or manager shall take all practicable measures to prevent inadvertent access to mine entrances, pits and openings that are dangerous by reason of their depth or otherwise, by unauthorized persons and ensure that the mine workings and fixtures remain secure.

Major Dumps

10.6.5 The long-term stability of exposed slopes of any major dump shall meet the criteria provided in the Interim Guidelines of the British Columbia Mine Waste Rock Pile Research Committee at the time of permitting or as amended by the chief inspector.

Impoundments

- 10.6.6**
- (1) The long-term stability of exposed slopes of impoundments shall meet the criteria provided in the design at the time of permitting or as determined by the engineer of record.
 - (2) Impoundments not operated for a period of 12 or more months may be declared as closed by the chief inspector.

Closure of a tailings storage facility or dam

- 10.6.7**
- (1) Prior to closure or upon declared closure of a tailings storage facility or dam, the manager shall submit a final detailed closure plan to achieve the approved end land and water use objectives.
 - (2) The closure plan shall include a detailed construction cost estimate, schedule and monitoring plan for implementation.
 - (3) The closure plan shall be prepared by one or more qualified professionals in consideration of the HSRC Guidance Document.

Tailings Storage Facility Closure OMS Manual

10.6.8 (1) The manager shall submit a Tailings Storage Facility Operations, Maintenance and Surveillance Manual for closure and review and update the plans regularly to reflect significant ongoing changes during closure.

- (2) The Tailings Storage Facility Operations, Maintenance and Surveillance Manual shall include requirements for monitoring and shall define appropriate resources and staffing to carry out the works and monitoring associated with closure.

On-going Management Requirements

- 10.6.9** Where a mine requires on-going mitigation, monitoring or maintenance, the owner, agent, or manager shall submit a closure management manual that
- (a) describes and documents key aspects of the ongoing mitigation, monitoring and maintenance requirements, and
 - (b) tracks important changes to components of the system that effect long-term mitigation, monitoring and maintenance requirements.

Permanent Spillways

- 10.6.10** Permanent spillways shall be designed by a Professional Engineer in consideration of the HSRC Guidance Document and installed prior to the completion of closure of the tailings storage facility or dam.

Permit amendment or variance after closure

- 10.6.11** The manager of a tailings storage facility or dam that has completed closure but not achieved the release of permit obligations may apply for permit amendments or variances including but not limited to reduced frequency of monitoring, dam safety inspections and dam safety reviews.

Landforms

- 10.6.12** The manager of a tailings storage facility or dam that can be considered a landform may apply to the chief inspector for the release of permit obligations under the *Mines Act*.

Reactivation of impoundment

- 10.6.13** The owner, agent or manager may make an application for a permit to reactivate a closed or abandoned impoundment.

Decommissioning of Water Structures

- 10.6.14** A water reservoir or pond which is closed or declared inoperative by the chief inspector shall be breached or otherwise disposed of in accordance with the license under the *Water Sustainability Act* or permit under the *Environmental Management Act*.

Security

- 10.6.15** On the closure of a mine, and on the chief inspector being satisfied that some or all the conditions of the permit have been complied with, the person who deposited a security under section 10 (4) or 10 (5) of the *Mines Act* shall be entitled to refund of some or all of the security and any accumulated interest, less any amount paid out under section 10 (8) of the *Mines Act*.

Application for security release

10.6.16 An application for security release or a partial security release, that details the reclamation activities that have been completed under the requirements of the act, the code, and approved reclamation plan, shall be submitted to the chief inspector.

Reclamation Standards

Reclamation Defined

10.7.1 It is the duty of every owner, agent, and manager to institute and, during the life of the mine, to carry out a program of environmental protection and reclamation, in accordance with the standards described in section 10.7.4 to 10.7.21 of this code.

Pre-legislation Disturbances

10.7.2 Where environmental disturbance occurred at a site prior to the enactment of reclamation legislation in 1969, and has remained inactive since this time, the portion of environmental disturbance, which occurred before the enactment of reclamation legislation in 1969, is exempt from the re-vegetation provisions.

Exclusions

10.7.3 A reclamation standard prescribed under section 10.7.4 to 10.7.21 of this code does not apply where

- (a) a mine is specifically excluded by a condition of its permit from complying with a particular standard, or
- (b) a disturbance created by a mining activity has been reclaimed, inspected, and found to be satisfactory to an inspector.

Land Use

10.7.4 The land surface shall be reclaimed to an end land use approved by the chief inspector that considers previous and potential uses.

Capability

10.7.5 Excluding lands that are not to be reclaimed, the average land capability to be achieved on the remaining lands shall be similar to the average that existed prior to mining, unless the land capability is not consistent with the approved end land use or compromises long-term physical and/or geochemical stability.

Long Term Stability

10.7.6 Land, watercourses and access roads shall be left in a manner that ensures long-term physical and geochemical stability.

Re-vegetation

10.7.7 On all lands to be re-vegetated, land shall be re-vegetated to a self-sustaining state using appropriate plant species.

Growth Medium

10.7.8 On all lands to be re-vegetated, the growth medium shall satisfy land use, capability, and water quality objectives. All surficial soil materials removed for mining purposes shall be saved for use in reclamation programs unless these objectives can be otherwise achieved.

Landforms

10.7.9 Where practicable, land and watercourses shall be reclaimed in a manner that is consistent with the adjacent landforms.

Structures and Equipment

10.7.10 Prior to abandonment, and unless exempted by the chief inspector,

- (a) all machinery, equipment and building superstructures shall be removed,
- (b) concrete foundations shall be covered and re-vegetated, and
- (c) all scrap material shall be disposed of in a manner acceptable to an inspector.

Dumps

10.7.11 Dumps shall be reclaimed to ensure long-term stability, and long-term erosion control.

Watercourses

10.7.12 Watercourses shall be reclaimed to a condition that ensures

- (a) drainage is restored either to original watercourses or to new watercourses that will sustain themselves without maintenance, and
- (b) the level of productive capacity shall not be less than existed prior to mining, unless the owner, agent or manager can provide evidence which demonstrates, to the satisfaction of the chief inspector, the impracticality of doing so.

Open Pits

10.7.13

- (1) Pit walls constructed in overburden shall be reclaimed in the same manner as dumps unless an inspector is satisfied that to do so would be unsafe or conflict with other proposed land uses.
- (2) Pit walls including benches constructed in rock, or steeply sloping footwalls, are not required to be re- vegetated.
- (3) Where the pit floor is free from water, and safely accessible, vegetation shall be established.
- (4) Where the pit floor will impound water and it is not part of a permanent water treatment system, provision must be made to create a body of water where use and productivity objectives are achieved.

Blocking Access Roads

10.7.14 All access roads to surface areas of the mine that may be dangerous shall be effectively blocked to prevent inadvertent vehicular access.

Securing openings

- 10.7.15**
- (1) All shafts, raises, stope openings, adits, or drifts opening to the surface shall be either capped with a stopping of reinforced concrete or filled with material so that subsidence of the material will not pose a future hazard.
 - (2) In the case of shafts or raises, the stopping shall be secured to solid rock or to a concrete collar secured to solid rock and capable of supporting a uniformly distributed load of 12 kPa or a concentrated load of 24 kN, whichever is greater.
 - (3) Where there is evidence or a potential for use by wildlife, mine openings may be fitted with a barrier that allows wildlife passage but prevents human entry.

Drains

10.7.16 When mine openings are permanently closed and where it may be possible for mine water to build dangerous pressures and cause a blow-out of the fill or concrete with sudden and dangerous force, a permanent and effective drain shall be installed.

Metal Uptake

10.7.17 When required by the chief inspector, vegetation shall be monitored for metal uptake.

Ecological Risk Assessment

- 10.7.18**
- (1) When required by the chief inspector, the owner, agent or manager shall commission an ecological risk assessment.
 - (2) Where there is a significant ecological risk, reclamation procedures shall ensure that levels are safe for plant and animal life and, where this cannot be achieved, other measures shall be taken to protect plant and animal life.

Disposal of Chemicals and Reagents

10.7.19 Chemicals or reagents, which cannot be returned to the manufacturer, shall be disposed of in compliance with municipal, regional, provincial and federal statutes.

Water Quality

10.7.20 If water quality from any component of the mine results in exceedances of applicable provincial water quality standards in the receiving environment, when required by the chief inspector, remediation strategies shall be implemented for as long as is necessary to mitigate the problem.

Monitoring

10.7.21 The owner, agent, or manager shall undertake monitoring programs, as required by the chief inspector, to demonstrate that reclamation and environmental protection objectives including land use, productivity, water quality and stability of structures are being achieved.

Release of Obligations

10.7.22 If all conditions of the Act, code and permit have been fulfilled to the satisfaction of the chief inspector and there are no on-going inspection, monitoring, mitigation or maintenance requirements, the owner, agent or manager will be released from all further obligations under the *Mines Act*.