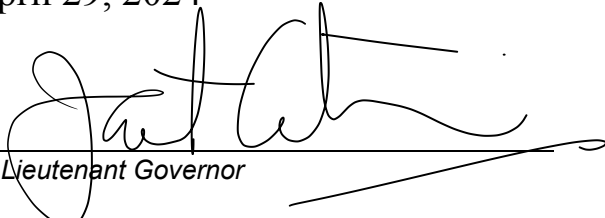


PROVINCE OF BRITISH COLUMBIA

ORDER OF THE LIEUTENANT GOVERNOR IN COUNCIL

Order in Council No. 214

, Approved and Ordered April 29, 2024

  
Lieutenant Governor

Executive Council Chambers, Victoria

On the recommendation of the undersigned, the Lieutenant Governor, by and with the advice and consent of the Executive Council, orders that,

- (a) subject to paragraph (b), the amendments to the Health, Safety and Reclamation Code for Mines in British Columbia, as prepared by the Health, Safety and Reclamation Code Committee and set out in the attached Schedule, are approved, and
- (b) effective May 1, 2025, approval is given to section 10.4.2 (1) (b) of the Health, Safety and Reclamation Code for Mines in British Columbia, as enacted by section 24 of the amendments referred to in paragraph (a).



Minister of Energy, Mines and Low Carbon Innovation



Presiding Member of the Executive Council

*(This part is for administrative purposes only and is not part of the Order.)*

Authority under which Order is made:

Act and section: Mines Act, R.S.B.C. 1996, c. 293, s. 34 (6)

Other: \_\_\_\_\_

## SCHEDULE

### **1 The definition section of the Health, Safety and Reclamation Code for Mines in British Columbia is amended**

#### **(a) by adding the following definitions:**

“category 1A dam” means a dam as set out in section 10.2.11 (2).

“category 1B dam” means a dam as set out in section 10.2.11 (3).

“category 2 dam” means a dam as set out in section 10.2.11 (4).

“category 3 dam” means a dam that is not a category 1A dam, category 1B dam or category 2 dam.

“climate change” means a change of climate that

- (a) is attributed directly or indirectly to human activity,
- (b) alters the composition of the global atmosphere, and
- (c) is in addition to natural climate variability observed over comparable time periods.

“coarse coal rejects” or “CCR” means the coarse particles remaining from the preparation of coal.

“co-disposed tailings storage facility” means a TSF that contains a combination of tailings and waste rock. ,

#### **(b) by repealing the definition of “dam” and substituting the following:**

“dam” means a barrier that is constructed for the retention of

- (a) water, including water containing any other substance including tailings, or
- (b) flowable tailings. ,

#### **(c) by adding the following definitions:**

“dam qualified person” means a person designated under section 10.4.2 (1) (b).

“design summary document” means the document described in section 10.5.4.

“dewatered tailings” means tailings that have had the moisture content reduced so as to be handled using dry handling processes.

“dewatered tailings storage facility” means a TSF that contains dewatered tailings.

“emerging technology” means a technological innovation to mining equipment and related infrastructure that has an inherent risk to health and safety including

- (a) autonomous and semi-autonomous machine systems,
- (b) battery electric vehicles,
- (c) hybrid vehicles,
- (d) hydrogen-powered vehicles, and
- (e) trolley-assisted technology. ,

#### **(d) by repealing the definition of “engineer of record” and substituting the following:**

“engineer of record” means a professional engineer who is retained and accepts professional responsibility for a TSF or dam under section 10.4.1. ,

**(e) in the definition of “environmental design flood” by striking out “untreated”,**

**(f) by adding the following definitions:**

“*failure scenario*” means an outline, from beginning to end, of a sequence of future events that

(a) may lead to a failure of a TSF or dam, and

(b) takes into account loading conditions and failure modes.

“*final closure*” means a closed tailings storage facility or dam that does not pose ongoing material risks to people or the environment. ,

**(g) by repealing the definition of “impoundment” and substituting the following:**

“*impoundment*” means a body of water, which may contain another substance or flowable materials including flowable tailings, that is confined by natural barriers or dams. ,

**(h) by adding the following definitions:**

“*Indigenous knowledge*” means the knowledge Indigenous peoples have, that

(a) has been acquired through their unique cultures, languages, spiritual teachings, values, history, governance, legal systems, experiences and observations within their traditional territories, and

(b) is dynamic, holistic, intergenerational and continuously evolving within contemporary society.

“*management system*” means the processes and procedures that collectively provide a systematic framework for ensuring that tasks are performed consistently in order to achieve a specified outcome and support continual improvement in performance. ,

**(i) by repealing the definitions of “Professional Engineer” and “quantifiable performance objectives” and substituting the following:**

“*professional engineer*” means an individual who is

(a) registered to practise in the Province of British Columbia, according to the *Professional Governance Act* and *Engineers and Geoscientists Regulation*, and

(b) qualified to practise in the relevant discipline.

“*quantifiable performance objectives*” means the measurable monitoring parameters that are required to be maintained within predetermined limits. ,

**(j) by repealing the definition of “respirable combustible dust – RCD”,**

**(k) by adding the following definition:**

“*tailings*” means the residue remaining from the preparation of coal or from a concentrate of minerals but does not include coarse coal rejects or the by-products from placer mining, sand and gravel pits, rock quarries or industrial mineral quarries. ,

**(l) by repealing the definition of “tailings storage facility” or “TSF” and substituting the following:**

“tailings storage facility” or “TSF” means a facility that stores tailings and manages water, if any, related to the tailings, including tailings dams, tailings deposition, water reclamation systems, water management systems and associated engineering works and structures, but does not include tailings placed in an underground mine. , *and*

*(m) by amending the definition of “TSF qualified person” by striking out “(1) (b)” and substituting “(1) (a)”.*

**2 Section 1.6.9 (1) (c.1) is repealed and the following substituted:**

(c.1) if emerging technology is used at the mine, safe working procedures for the emerging technology, .

**3 The following section is added before the heading “Certification Procedure”:**

**Risk of Drowning**

**1.12.8** The manager must ensure that every worker working where drowning may be a risk is under the supervision of a qualified person carrying out the safe work plan as set out in section 3.3.3.

**4 Section 2.1.1 is repealed and the following substituted:**

**Maximum Allowable Exposures**

**2.1.1 (1)** The manager must ensure that no employee is exposed to airborne concentrations of a substance or noise in excess of the limit specified in

(a) Table 2-1 or 2-2, or

(b) the publication by the American Conference of Governmental Industrial Hygienists entitled, “Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices”, as amended from time to time, if the substance or noise is not specified in Table 2-1 or Table 2-2.

(2) In the case of Item 17, Diesel Particulate Matter, as Elemental Carbon, in Table 2-1, the manager does not have to comply with subsection (1) with respect to the Item until May 1, 2025.

**5 Table 2-1 and the Footnotes for Table 2-1 are repealed and the following substituted:**

**Table 2-1**

Item	Substance [CAS #]	TLV-TWA	TLV-STEL	Notation
1	Acetone [67-64-1]	750 ppm	1,000 ppm	–
2	Aluminum metal [7429-90-5] and insoluble compounds	1 mg/m <sup>3</sup> (R)	–	–
3	Ammonia [7664-41-7]	25 ppm	35 ppm	–
4	Antimony [7440-36-0] and compounds, as Sb	0.5 mg/m <sup>3</sup>	–	–
5	Arsenic [7440-38-2] and inorganic compounds, as As	0.01 mg/m <sup>3</sup>	–	A1, 1
6	Asbestos [1332-21-4], all forms	0.1 fibre/cc (F)	–	A1, 1
7	Beryllium [7440-41-7], soluble and insoluble compounds, as Be	0.002 mg/m <sup>3</sup>	–	A1, 1, Skin, DSEN (soluble); A1, 1, RSEN (soluble and insoluble)

Item	Substance [CAS #]	TLV-TWA	TLV-STEL	Notation
8	Cadmium [7440-43-9] and compounds, as Cd	0.002 mg/m <sup>3</sup> (R), 0.01 mg/m <sup>3</sup>	–	A2, 1
9	Carbon dioxide [124-38-9]	5,000 ppm	30,000 ppm	–
10	Carbon disulphide [75-15-0]	1 ppm	–	Skin
11	Carbon monoxide [630-08-0]	25 ppm	–	Repro
12	Chlorine [7782-50-5]	0.5 ppm	1 ppm	–
13	Chromium [7440-47-3] and inorganic compounds Trivalent chromium compounds, as Cr(III), Water-soluble compounds	0.5 mg/m <sup>3</sup>	–	DSEN, RSEN
	Hexavalent chromium compounds, as Cr(VI) Water-soluble compounds	0.025 mg/m <sup>3</sup>	–	A1, 1, Skin, DSEN, RSEN
	Insoluble compounds	0.01 mg/m <sup>3</sup>	–	A1, 1, DSEN, RSEN
14	Coal Dust Anthracite [8029-10-5] Bituminous or Lignite [308062-82-0]	0.4 mg/m <sup>3</sup> (G), (R) 0.9 mg/m <sup>3</sup> (G), (R)	– –	– –
15	Cobalt [7440-48-4] and inorganic compounds, as Co	0.02 mg/m <sup>3</sup>	–	2B, DSEN, RSEN
16	Copper [7440-50-8] Fume, as Cu Dusts, and mists, as Cu	0.2 mg/m <sup>3</sup> 1 mg/m <sup>3</sup>	– –	– –
17	Diesel Particulate Matter, as Elemental Carbon	0.1 mg/m <sup>3</sup>	–	1
18	Formaldehyde [50-00-0]	0.1 ppm	0.3 ppm	A1, 1, DSEN, RSEN
19	Hydrogen chloride [7647-01-0]	–	C 5 ppm	–
20	Hydrogen cyanide [74-90-8]	–	C 10 ppm	Skin
21	Hydrogen sulphide [7783-06-4]	10 ppm	15 ppm	–
22	Iron oxide dust and fume (Fe <sub>2</sub> O <sub>3</sub> ) [1309-37-1], as Fe	5 mg/m <sup>3</sup>	–	–
23	Lead [7439-92-1] and inorganic compounds, as Pb	0.05 mg/m <sup>3</sup>	–	2B, Repro (Elemental); 2A, Repro (Inorganic)
24	Manganese [7439-96-5], elemental and inorganic compounds, as Mn	0.02 mg/m <sup>3</sup> (R), 0.1 mg/m <sup>3</sup> (I)	–	Repro
25	Molybdenum [7439-98-7], as Mo Soluble compounds Metal and insoluble compounds	0.5 mg/m <sup>3</sup> (R) 10 mg/m <sup>3</sup> (I), 3 mg/m <sup>3</sup> (R)	– –	– –
26	Methane [74-82-8]	(D)	–	–
27	Methylene bisphenyl isocyanate (MDI) [101-68-8]	0.005 ppm	–	Skin, RSEN
28	Nickel [7440-02-0], Elemental and soluble inorganic compounds, as Ni	0.05 mg/m <sup>3</sup>	–	1 (Ni compounds), 2B (elemental and alloys containing Ni)
29	Nickel [7440-02-0], Insoluble inorganic compounds, as Ni	0.05 mg/m <sup>3</sup>	–	A1, 1
30	Nitric acid [7697-37-2]	2 ppm	4 ppm	–
31	Nitric oxide [10102-43-9]	25 ppm	–	–
32	Nitrogen dioxide [10102-44-0]	1 ppm	–	–
33	Nitrous oxide [10024-97-2]	50 ppm	–	Repro
34	Ozone [10028-15-6]	–	C 0.1 ppm	–
35	Silica – Amorphous Diatomaceous earth (uncalcined) [61790-53-2] Precipitated silica [112926-00-8]	10 mg/m <sup>3</sup> (E) 10 mg/m <sup>3</sup> (E)	– –	– –

Item	Substance [CAS #]	TLV-TWA	TLV-STEL	Notation
	Silica gel	10 mg/m <sup>3</sup> (E)	-	-
	Silica, fume [69012-64-2]	2 mg/m <sup>3</sup> (R)	-	-
36	Silica – Crystalline			
	Cristobalite [14464-46-1]	0.05 mg/m <sup>3</sup> (R)	-	A2, 1
	α-Quartz [14808-60-7; 1317-95-9]	0.05 mg/m <sup>3</sup> (R)	-	A2, 1
37	Sulphur dioxide [7446-09-5]	2 ppm	5 ppm	-
38	Sulphuric acid [7664-93-9]	1 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	A2, 1
39	Toluene [108-88-3]	100 ppm	150 ppm	Repro
40	Vanadium pentoxide [1314-62-1], as V	0.05 mg/m <sup>3</sup> (I)	-	2B
41	Wood dust			
	Certain hard woods as beech and oak	1 mg/m <sup>3</sup>	-	A1, A2, 1
	Soft wood	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	1
42	Zinc oxide [1314-13-2]	2 mg/m <sup>3</sup> (R)	-	-

### Footnotes for Table 2-1

Units: Exposure limits are reported in ppm, mg/m<sup>3</sup> or fibre/cc. In general, contaminants present in air in a vapour or gaseous state are reported in parts per million (ppm).

Contaminants present in air as an aerosol (dust, fume, mist) are typically reported in milligrams per cubic meter (mg/m<sup>3</sup>). For information on unit conversions between ppm and mg/m<sup>3</sup>, consult the publication by the American Conference of Governmental Industrial Hygienists (“ACGIH”) entitled, “Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices” (“TLVs & BEIs”).

ppm means parts of vapour or gas per million parts of contaminated air volume at 25 degrees Celsius and 760 torr.

fibre/cc means fibre per cubic centimeter.

mg/m<sup>3</sup> means milligrams of substance per cubic meter of air.

CAS # means Chemical Abstract Series number.

C means ceiling limit (TLV-C).

(D) Simple asphyxiant; for more information consult the ACGIH publication, TLVs and BEIs, as amended from time to time, on this topic.

(E) The value is for particulate matter containing no asbestos and < 1% crystalline silica.

(F) Respirable fibres longer than 5 µm and with an aspect ratio equal to or greater than 3:1, as determined by the membrane filter method at 400–450× magnification (4-mm objective), using phase contrast illumination.

(G) The value is for particulate matter containing <5% free silica.

(I) These threshold limit values are for the inhalable fraction of particulate matter for the substance listed. The mass concentration of inhalable particulate matter for the application of this limit is to be determined in accordance with the parameters established in the ACGIH publication, TLVs & BEIs, as amended from time to time.

(R) These threshold limit values are for the respirable fraction of particulate matter for the substance listed. The mass concentration of respirable particulate matter for the application of this limit is to be determined in accordance with the parameters established in the ACGIH publication, TLVs & BEIs, as amended from time to time.

DSEN means that the substance has been identified by the ACGIH as having specific evidence of the potential to produce sensitization by the dermal route.

RSEN means that the substance has been identified by the ACGIH as having specific evidence of the potential to produce sensitization by the respiratory route.

Repro means that the substance has been identified by the ACGIH as a reproductive toxin.

Skin means that the ACGIH has identified that there is potential significant contribution to the overall exposure by this route, including mucous membranes and the eyes, by contact with vapours, liquids, and solids.

### Notations column:

ACGIH notations A1 and A2 and International Agency for Research on Cancer (“IARC”) notations 1, 2A and 2B indicate substances designated as carcinogens. The different categories used by the two organizations indicate different levels of certainty of carcinogenic effect, e.g. from confirmed carcinogen to probable or possible. For additional information on the background and rationale for the different categories of carcinogens, refer to the ACGIH publication, TLVs & BEIs, as amended from time to time, ACGIH publication, “Supplement to the Documentation of the Threshold Limit Values and Biological Exposure Indices”, as amended from time to time,

and the IARC publication, "Overall Evaluations of Carcinogenicity to Humans", as amended from time to time. Both agencies provide information on their web sites.

ACGIH Carcinogen designation:  
A1 Confirmed Human Carcinogen.  
A2 Suspected Human Carcinogen.

IARC Carcinogen classification:  
1 Carcinogenic to humans.  
2A Probably carcinogenic to humans.  
2B Possibly carcinogenic to humans.

## **6 Section 3.3.3 is repealed and the following substituted:**

### **Drowning Hazard**

- 3.3.3** (1) The manager must ensure that a safe work plan is developed by a qualified person, in consultation with the Occupational Health and Safety Committee and appropriate workers, and implemented before any work begins where drowning may be a risk.
- (2) The safe work plan must include the following:
- (a) identification of all relevant hazards;
  - (b) an evaluation of the risk level created by each hazard identified in paragraph (a);
  - (c) identification of all controls that, when implemented, are intended to mitigate the hazards referred to in paragraph (a);
  - (d) a requirement to have a spotter if identified as a control under paragraph (c);
  - (e) identification of safety equipment and safety devices relevant to each task to be performed;
  - (f) subject to subsections (3) and (4), requirements for the use, storage, maintenance and inspection of the safety equipment and safety devices referred to in paragraph (e);
  - (g) emergency procedures;
  - (h) a rescue plan, including a means for orientation, such as a light or beacon, to identify safe egress when work is done at night.
- (3) The manager must provide the following personal protective equipment and safety devices to workers working where drowning may be a risk:
- (a) personal floatation devices, accepted by Transport Canada, that do not create an increased risk when worn, as identified in the safe work plan;
  - (b) lifebuoys, accepted by Transport Canada, that are
    - (i) equipped with heaving lines of adequate length, and
    - (ii) placed at conspicuous locations;
  - (c) with respect to workers in or on mobile equipment, or non-self-propelled barges or dredges, which have a cab, the following items that must be accessible and secured in the cab for the purpose of emergency egress:
    - (i) a glass-breaking tool;
    - (ii) a seatbelt cutter;
    - (iii) an alternate source of air;
    - (iv) a whistle.
- (4) The manager must ensure that safety equipment and safety devices, identified in the safe work plan or subsection (3), are

- (a) readily available in safe operating condition, and
  - (b) regularly inspected and maintained.
- (5) The manager must ensure that all workers working where there is a risk of drowning are trained for the work they are performing.

7 *Section 4.4.2 is repealed.*

8 *The following heading and sections are added:*

## **Machinery and Equipment with Moving Parts**

### **Guards**

- 4.4.2** (1) In this section and sections 4.4.2.1 to 4.4.2.8, 4.4.16, 4.5.3 and 4.11.6, “**guard**” means a physical barrier that provides protection from a hazard.
- (2) The manager must ensure that machinery or equipment with moving parts is equipped with guards which are designed, constructed, installed and maintained so that
- (a) no person can reach over, under, around or through the guard and access a hazard including a drive belt, chain, rope or pulley, sprocket, flywheel, geared wheel, any opening through which a belt, pulley or wheel operates, any bolt, key or set screw, every part of any wheel or other moving part that projects unevenly from the surface, or all head, tail, drive and tension pulleys of a conveyor, and
  - (b) all material that may be ejected in the normal course of operating the machinery or equipment, which could be hazardous to a person, is safely contained.
- (3) Subsection (2) of this section, and sections 4.4.2.1 to 4.4.2.8, do not apply to idlers of a conveyor belt except with respect to return idlers, beneath a conveyor belt, that
- (a) are directly above a regular walkway or work area, and
  - (b) present a risk of harm to a person on the walkway or in the work area, beneath the return idlers, by being vertically reachable or by detaching and falling.

### **Fixed Guards**

- 4.4.2.1**(1) In this section, “**fixed guard**” means a guard that is kept in place with either a permanent attachment system or an attachment system that necessitates the use of tools to remove or open the guard.
- (2) The manager must ensure that, when fixed guards are removed from machinery or equipment, the attachment systems of the fixed guards remain attached to the guards or to the machinery or equipment.

### **Interlocked Guards**

- 4.4.2.2**(1) In this section, “**interlocked guard**” means a guard that is attached, and interlocked, to the operational controls of machinery or equipment which prevents the operation of hazardous machinery or equipment functions.



- (2) The manager must ensure that interlocked guards comply with CSA Z432:23, Chapter 9.5, Guards, interlocked.

**Distance Guards**

4.4.2.3(1) In this section, “**distance guard**” means a guard that prevents access to a hazard by its physical dimensions and distance from the hazard.

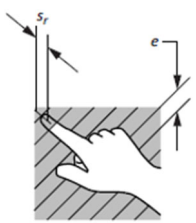
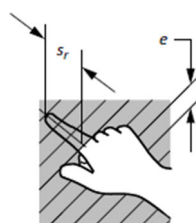
- (2) The manager must ensure that distance guards
- (a) have no greater than a 0.15 m opening between the adjacent walked surface and the bottom of the distance guard,
  - (b) have a minimum height of at least 1.8 m,
  - (c) open laterally or away from the hazard and cannot close by itself, and
  - (d) can only be removed by use of a tool.

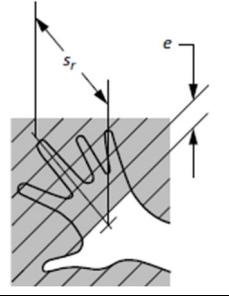
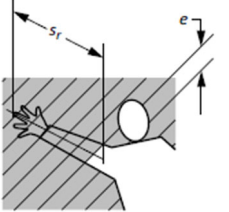
**Construction of Guards**

4.4.2.4 The manager must ensure that all guards

- (a) are designed to be of a suitable size and weight to permit ease of handling,
- (b) are of robust construction and are free of sharp edges, rough surfaces and protruding parts that could cause injury,
- (c) cause a minimal amount of visual obstruction during the production process, and
- (d) meet the requirements of Table 4-1 for opening size and distance from a hazard.

**Table 4-1  
Reaching through regular openings (in mm) -  
Persons 14 years of age and above\***

Part of Body	Illustration	Opening	Safety Distance to Hazard zone, $S_r$		
			Slot	Square	Round
Fingertip		$e \leq 4$	$\geq 2$	$\geq 2$	$\geq 2$
		$4 < e \leq 6$	$\geq 10$	$\geq 5$	$\geq 5$
Finger up to knuckle joint		$6 < e \leq 8$	$\geq 20$	$\geq 15$	$\geq 5$
		$8 < e \leq 10$	$\geq 80$	$\geq 25$	$\geq 20$

Hand		$10 < e \leq 12$	$\geq 100$	$\geq 80$	$\geq 80$
		$12 < e \leq 20$	$\geq 120$	$\geq 120$	$\geq 120$
		$20 < e \leq 30$	$\geq 850$	$\geq 120$	$\geq 120$
Arm up to junction with shoulder		$30 < e \leq 40$	$\geq 850$	$\geq 200$	$\geq 120$
		$40 < e \leq 120$	$\geq 850$	$\geq 850$	$\geq 850$

\*This table is based on data from Table 9.1 of CSA Z432:23

### Servicing Machinery or Equipment in Motion Without Removing Guards

**4.4.2.5** Machinery or equipment with guards may be serviced while in motion, without the lockout procedures set out in sections 4.11.1 to 4.11.7 applying, if the manager ensures that

- (a) the guards remain in place, and
- (b) only the parts of the machinery or equipment that are necessary for servicing are energized.

### Testing or Adjusting Energized Machinery or Equipment

**4.4.2.6** If machinery or equipment with guards can only be tested and adjusted after the guards are removed and while the machinery or equipment is energized, the lockout procedures set out in sections 4.11.1 to 4.11.7 do not apply to the machinery or equipment while it is being tested or adjusted provided the manager

- (a) establishes a safe procedure for testing and adjusting the machinery or equipment in accordance with the manufacturer's recommendations, if any,
- (b) ensures that only qualified persons, or employees under the direct supervision of a qualified person, perform the testing and adjusting, and
- (c) ensures that the safe procedure referred to in paragraph (a) is reviewed by the qualified persons and employees at the frequency determined by the manager.

### Machinery or Equipment Isolated by Height

**4.4.2.7** Despite section 4.4.2, guards are not required for exposed moving parts of machinery or equipment if the exposed moving parts are 3 m or more above the ground, working surface, walkway, stockpiles or material build-up, whichever surface is closest to exposed moving parts.

## **Overhead Drive Belts**

**4.4.2.8** Despite section 4.4.2.7, the manager must ensure that an overhead drive belt has guards if the whipping action caused by the belt breaking may be hazardous to a person.

**9** *Section 4.4.6 is repealed.*

**10** *Section 4.4.16 is amended*

*(a) by repealing subsection (6),*

*(b) in subsection (8) (a) by striking out “and without removing any protective fences or guards, and” and substituting “and, subject to subsection (8.1), without removing any guards, and”,*

*(c) by adding the following subsection:*

(8.1) If a conveyor system has guards that are not required under section 4.2.2, subsection (8) applies to servicing, or cleaning up spillage, on or around the moving conveyor belt as set out, except that the guards may be removed. ,

*(d) in subsection (9) by striking out “protective fences or”,*

*(e) by adding the following subsection:*

(9.1) Subsection (9) only applies with respect to guards that are required under section 4.2.2. , and

*(f) in subsection (10) by striking out “or fences”.*

**11** *The following section is added before the heading “Trackless Diesel Powered Equipment”:*

## **General Requirements**

**4.6.2** (1) The manager must ensure that all underground mining mobile equipment introduced into service in an underground mine on or after the date this section comes into force complies with CSA Standard M424.0-2022 Underground mining mobile equipment – General requirements.

(2) The manager must ensure that underground mining mobile equipment introduced into service in an underground mine before the date this section comes into force complies with

(a) CSA Standard M424.0-2022 Underground mining mobile equipment – General requirements, or

(b) in the case of the equipment operating in

(i) an underground coal mine, with the general vehicle and machine requirements set out in CSA Standard CAN/CSA-M424.1-88, “Flame-Proof Non-Rail Bound Diesel-Powered Machine for Use in Gassy Underground Coal Mines”, or

(ii) an underground mine, other than a coal mine, with the general vehicle and machine requirements set out in CSA Standard CAN/CSA-

M424.2-90, “Non-Rail Bound Diesel-Powered Machines for use in Non Gassy Underground Mines”.

**12 Section 4.7.1 is repealed and the following substituted:**

- 4.7.1** (1) The manager must ensure that trackless diesel-powered equipment, made for use in
- (a) underground coal mines, complies with CSA Standard M424.1-2022 Flameproof non-rail-bound diesel-powered machines for use in gassy underground coal mines, and
  - (b) underground mines other than coal, complies with CSA Standard M424.2-2022 Diesel-powered machines for use in non-gassy underground mines.
- (2) Subsection (1) (a) does not apply to trackless diesel-powered equipment, made for use in underground coal mines, if
- (a) the equipment is not used for cutting, digging and loading coal, and
  - (b) the manager, prior to the use of the equipment,
    - (i) makes health and safety procedures relating to the equipment,
    - (ii) updates the Mine Health and Safety Program, as set out in section 1.6.9 (1) (c), in relation to the health and safety procedures, and
    - (iii) submits a copy of the health and safety procedures to the chief inspector.

**13 The following sections are added before the heading “Flammable Materials”:**

**Rubber-tired, Self-propelled Underground Mining Machines**

- 4.7.2** The manager must ensure that rubber-tired, self-propelled underground vehicles used in underground mines comply with CSA Standard M424.3-2022 Braking performance – Rubber-tired, self-propelled underground mining machines.

**Self-propelled, Electrically driven, Non-rail-bound Mobile Machines**

- 4.7.3** The manager must ensure that self-propelled, electrically driven, non-rail-bound mobile machines used in underground mines, other than coal, comply with CSA Standard M424.4-2022 Self-propelled, electrically driven, non-rail-bound mobile machines for use in non-gassy underground mines.

**14 Section 4.9.4 is amended by adding the following subsection:**

- (3) The manager must ensure that mobile equipment and non-self-propelled barges or dredges performing work where drowning may be a risk are equipped with a secondary egress that is designed for the purpose and does not impede the safe exit of the operator.

**15 The following section is added:**

**Modifications Respecting Mobile Equipment Where Drowning May Be a Risk**

- 4.9.5.1** The manager must ensure that, if one or more parts of mobile equipment or non-self-propelled barges or dredges performing work where drowning may be a risk have been modified, and the modification may affect the safe operation of the

mobile equipment or non-self-propelled barge or dredge, a qualified professional approves the modification before the mobile equipment or non-self-propelled barge or dredge is used by workers.

- 16 *Section 4.11.2 is amended by striking out “equipment” wherever it appears and substituting “machinery or equipment”.*
- 17 *Section 4.11.6 is amended by striking out “, fences”.*
- 18 *Section 4.13.4 is repealed.*
- 19 *The heading immediately preceding section 6.14.1 and sections 6.14.1, 6.14.2 and 6.14.3 are repealed.*
- 20 *The heading immediately preceding section 6.18.1 is repealed and the following substituted:*

### **Remote Control Operations and Emerging Technology .**

- 21 *The heading immediately preceding section 6.18.3 and section 6.18.3 are repealed and the following substituted:*

#### **Requirements for a Project Management Plan**

- 6.18.3(1) Prior to the use of an emerging technology, the manager must submit to the chief inspector a project management plan, prepared by a qualified professional, respecting the emerging technology.
- (2) The project management plan must contain the following elements:
  - (a) a detailed risk assessment for the purpose of identifying, assessing and managing hazards;
  - (b) a summary of the safe working procedures in the Mine Health and Safety Program required under section 1.6.9 (1) (c.1);
  - (c) a summary of the project management plan, including project milestones and scope;
  - (d) details on location, access, infrastructure and equipment;
  - (e) a summary of key roles and responsibilities associated with the project;
  - (f) a summary of system functionality, redundancy, limitations and safety features;
  - (g) a commissioning plan;
  - (h) a maintenance and inspection plan;
  - (i) an operational plan;
  - (j) a description of the training program and competence assessment for working with and around the emerging technology as required in section 1.11.1 and 1.11.2 of this code;
  - (k) the process for investigating failures;
  - (l) a summary of the updates to the Mine Emergency Response Plan relating to the emerging technology as required under section 3.7.1 of this code;

- (m) a gap assessment of this code to identify non-conformances and plans and timelines to address the non-conformances, prior to implementation of the project management plan;
  - (n) a summary of critical controls as identified in the risk assessment referred to in paragraph (a);
  - (o) if autonomous and semi-autonomous machines are operated on the mine site, an interaction plan for human-operated equipment and personnel;
  - (p) if battery or hybrid vehicles are operated on the mine site, a battery management plan;
  - (q) if hydrogen-powered vehicles are operated on the mine site, a hydrogen management plan.
- (3) The manager must ensure the OHSC is provided with an opportunity to review and provide comments respecting the provisions of the project management plan that relate to the emerging technology and worker health and safety, as well as associated updates as required under subsection (5), prior to submission to the chief inspector.
- (4) The manager must implement and adhere to the project management plan once the chief inspector confirms that it meets the requirements of this code and is appropriate for the mine site.
- (5) If a material change is proposed to the operational use of an emerging technology, the manager must
- (a) ensure that a qualified professional updates the project management plan,
  - (b) submit the updated plan to the chief inspector, and
  - (c) not make operational changes until the chief inspector confirms that the updated project management plan meets the requirements of this code.

**22** *The following section is added before the heading “Equipment Operation – General”:*

**Emerging Technology Certifications**

- 6.18.4** The manager must ensure that emerging technology has been certified by an organization that is accredited by the Standards Council of Canada as meeting the requirements of
- (a) an applicable CSA Standard,
  - (b) an applicable standard recognized by the Standards Council of Canada, if a standard referred to in paragraph (a) does not exist, or
  - (c) an applicable standard acceptable to the chief inspector, if neither standard referred to in paragraphs (a) and (b) exist.

**23** *Section 6.37.2 is amended*

- (a) in subsection (2) by striking out “an inspector” and substituting “an inspector, and”,*
- (b) by repealing subsection (3), and*
- (c) in subsection (4) by striking out “respirable combustible dust” and substituting “diesel particulate matter”.*

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**10.1 Mine Plan and other Plans**

**Preparation of Plans**

- 10.1.1** The owner, agent or manager must ensure that the mine plan, reclamation plan, closure plan and any plans related to the protection of the environment, which are required to be developed, made or updated under this Part, are
- (a) prepared taking into consideration the health and safety of the public and persons involved in the work,
  - (b) designed to make it as practicable as possible in the future to mine zones affected by the plan,
  - (c) designed to protect the land and watercourses, and
  - (d) prepared by qualified professionals or qualified persons, except as otherwise set out in Part 10.

**Proposed Placer Mines, Gravel Pits and Quarries**

- 10.1.2** (1) The proposed mine plan and reclamation program filed with the inspector in compliance with section 10 (1) of the *Mines Act* must 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 may proceed without the inspector granting a permit or authorization or the chief permitting officer granting an exemption under section 10 (2) of the *Mines Act*.

**10.2 Permit Application**

**Permit Application**

- 10.2.1** (1) The owner, agent or manager must submit in writing an application to the chief permitting officer 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 may proceed without the chief permitting officer granting a permit or authorization.
- (3) The chief permitting officer must determine the number of copies of the application required.

### **Application Requirements**

**10.2.2** The application referred to in section 10.2.1 (1) of this code must include the following unless otherwise authorized by the chief permitting officer:

- (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 and 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
  - (xii) 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 licenses, 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, 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 that are compatible with environmental protection, reclamation and mine closure,
- (vii) designs and details for tailings storage, including a design report for each TSF and dam as set out in section 10.5.3,
- (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 as set out in section 10.6.7 (1), and
- (xii) a traffic control procedure as required under section 6.8.3;
- (e) a program for the environmental protection of land and water courses 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 10.1.1 (a) to (c) are being met,
    - (B) the reclamation standards as outlined in sections 10.9.4 to 10.9.21 are being met, and
    - (C) environmental protection of land and watercourses required under paragraph (h) (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 failure and breach or runout assessment as set out in section 10.5.5;
- (h) 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, and
  - (ii) proposed use and capability objectives for the land and watercourses;
- (i) the closure design report for each TSF or dam developed under section 10.6.12 (1);

- (j) 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 permitting officer, may be filed in a separate confidential report;
- (k) any other relevant information required by the chief permitting officer.

#### **Underground Openings and Workings**

- 10.2.3** (1) The manager must ensure that tailings storage facility designs that use underground openings meet the requirements of section 10.5.10 (1).
- (2) The manager must ensure that tailings storage facility designs take into account the potential effects on, and interactions with, underground workings.

#### **Major Dumps**

- 10.2.4** The manager must ensure that a major dump is designed
- (a) in consideration of the Interim Guidelines of the British Columbia Mine Waste Rock Pile Research Committee, and
  - (b) to allow for re-contouring such that final reclamation is consistent with the approved end land use.

#### **Metal Leaching and Acid Rock Drainage**

- 10.2.5** The manager must ensure that plans for the prediction, and if necessary, the prevention, mitigation and management of metal leaching and acid rock drainage is prepared in consideration of the Guidelines for Metal Leaching and Acid Rock Drainage at Minesites in British Columbia.

#### **Mine Development Review Committee**

- 10.2.6** (1) The chief permitting office may refer to the advisory committee or the regional advisory committee established pursuant to section 9 of the *Mines Act*,
- (a) applications submitted under section 10.2.1 of this code, and
  - (b) any Notice of Work submitted under section 10.1.2 of this code.
- (2) The advisory committee or regional advisory committee must review every application referred to them under subsection (1) and make recommendations to the chief permitting officer within 60 days following application.
- (3) If no recommendations under subsection (2) have been received within 60 days, the chief permitting officer will deem that there are no concerns.

#### **Circulation of Application**

- 10.2.7** (1) If a permit application under section 10.2.1 is not referred to a committee for review under section 10.2.6, an inspector may circulate it to other ministries and agencies and they have 30 days following referral to make written representations to the inspector.
- (2) If no written representations under subsection (1) have been received within 30 days, the inspector will deem that there are no concerns.

## Permit

**10.2.8** Before issuing a permit under section 10 (1) of the *Mines Act*, the chief permitting officer must consider the following:

- (a) any recommendations made by a committee under section 10.2.6 of this code;
- (b) any written representations received under section 10.2.7 of this code;
- (c) any written representations received under section 10.3.2 of this code.

## Departure from Approval

**10.2.9** The owner, agent or manager must notify the chief permitting officer in writing of any intention to depart, to any substantial degree, from the mine plan and reclamation program authorized under section 10.1.2 or section 10.2.1 and must not proceed to implement the proposed changes without the written authorization of the chief permitting officer.

## Exemptions

- 10.2.10**(1) Sections 10.2.1 to 10.2.5 do not apply to placer mines, sand and gravel pits and quarries unless required by the chief permitting officer.
- (2) Sections 10.5.7, 10.5.8 and 10.5.9 do not apply to a TSF that
- (a) was granted the initial permit before July 20, 2016,
  - (b) is not active, and
  - (c) has no adverse material change after the date this subsection comes into force.
- (3) Sections 10.5.2, 10.5.4, 10.5.5, 10.5.7, 10.5.8 and 10.5.9 do not apply to a category 3 dam that
- (a) was granted the initial permit before the date this subsection comes into force,
  - (b) is low consequence as determined in accordance with section 10.5.6, and
  - (c) does not contain tailings.

## Exemptions and Obligations for Category 1A, Category 1B and Category 2 Dams

- 10.2.11**(1) Sections 10.4.1 to 10.6.13 do not apply to category 1A dams, category 1B dams and category 2 dams.
- (2) A dam is a category 1A dam if
- (a) the dam is at a placer mining site, a sand and gravel pit, a rock quarry or an industrial mineral mine, and
  - (b) the manager assesses that the following apply:
    - (i) the dam meets all the requirements in Table 10-1;
    - (ii) the dam contains no tailings;
    - (iii) there is no identifiable human population at risk of injury in the event of a breach of the dam other than through unforeseen misadventure;
    - (iv) there is no potential for human loss of life in the event of a breach of the dam;

- (v) there are no seasonally or permanently occupied buildings or infrastructure within 500 m downstream of the dam;
  - (vi) the dam does not contain toxic or deleterious substances, excluding suspended sediment.
- (3) A dam is a category 1B dam if
- (a) the dam is at a metal or coal mine, and
  - (b) a qualified professional assesses that the following apply:
    - (i) the dam meets all the requirements in Table 10-1;
    - (ii) the dam contains no tailings;
    - (iii) in the event of a breach of the dam, other than through unforeseen misadventure,
      - (A) the effect of water released to receiving streams on aquatic or terrestrial habitat is short-term and reversible,
      - (B) there is no identifiable human population at risk of injury, and
      - (C) there is no potential for human loss of life;
    - (iv) there are no seasonally or permanently occupied buildings or infrastructure within 500 m downstream of the dam.
- (4) A dam is a category 2 dam if a professional engineer
- (a) assesses that the dam meets all the requirements in Table 10-2, and
  - (b) submits the assessment to the chief inspector.
- (5) The assessments referred to in subsections (2) (b), (3) (b) and (4) (a) must be made available to an inspector on request.
- (6) The manager must ensure that all category 1A dams, category 1B dams and category 2 dams are properly inspected, maintained and repaired in a manner that keeps the dams in good operating condition.

**Table 10-1 Category 1A & Category 1B Dam Requirements**

Dam Criteria	Required Value
Height* (metres) x Storage volume (metres <sup>3</sup> )	<20,000 m <sup>4</sup>
Maximum height*	2.5m
Minimum crest width	3m
Dam slopes	2H:1V or flatter
Maximum water level	0.5m below the crest

\*as measured from the lowest point of the downstream toe of the dam to the crest of the dam.

**Table 10-2 Category 2 Dam Requirements**

Dam Criteria	Required Value
Maximum storage volume*	30,000 m <sup>3</sup>
Maximum height**	2.5 m
Contents	Does not impound tailings
Dam slopes	2H:1V or flatter

Maximum water level	0.5 m below crest or as determined by P.Eng.
Consequences of potential failure scenarios	Low***

\*as calculated based on the maximum water level.

\*\*as measured from the lowest point of the downstream toe of the dam to the crest of the dam.

\*\*\*as determined under section 10.5.6

### 10.3 Filing and Reporting

#### Publication

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

#### Written Response

**10.3.2** If a notice of filing has been published under section 10.3.1 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 permitting officer.

#### Mine Plan, Reclamation Plan and Closure Plan

- 10.3.3** (1) Unless otherwise stated in the permit, the manager must ensure that the mine plan, reclamation plan and closure plan are
- (a) developed and provided to the chief inspector on commencement of operations, and
  - (b) updated and provided to the chief inspector at least every 5 years.
- (2) The manager must ensure that the reclamation plan outlines the progressive reclamation activities planned for the 5 years following the date on which the mine plan is updated in accordance with subsection (1) (b).
- (3) The manager must
- (a) ensure that reasonable efforts are made to engage with each affected First Nation in order for each First Nation to identify if it wants to receive the mine plan, reclamation plan or closure plan described in subsection (1), and
  - (b) provide to each First Nation a copy of each of the most recent plans identified by the First Nation under paragraph (a) of this subsection, in accordance with the timeframe applicable with respect to the chief inspector.

#### Additional Reporting Requirements

- 10.3.4** (1) In addition to other reporting requirements set out in this Part, the manager must
- (a) annually provide to the chief inspector
    - (i) a description, in a form specified by the chief inspector, of the reclamation and environmental monitoring work referred to in section 10.2.2 (e), by March 31 of the following year,

- (ii) a summary of outstanding TSF and dam orders issued by inspectors, including the scheduled completion dates, by March 31 of the following year, and
- (iii) a report, respecting each affected First Nation, that lists
  - (A) the documents the First Nation identified under subsection (2) (a) of this section and sections 10.3.3 (3) (a), 10.4.3 (8) (a), 10.5.4 (3) (a), 10.6.2 (5) (a), 10.6.3 (3) (a), 10.6.4 (6) (a), 10.6.5 (6) (a), 10.6.7 (11) (a), 10.6.12 (8) (a) and 10.7.1 (3) (a), by March 31 of the following year, and
  - (B) the documents provided to the First Nation under subsection (2) (b) of this section and sections 10.3.3 (3) (b), 10.4.3 (8) (b), 10.5.4 (3) (b), 10.6.2 (5) (b), 10.6.3 (3) (b), 10.6.4 (6) (b), 10.6.5 (6) (b), 10.6.7 (11) (b), 10.6.12 (8) (b) and 10.7.1 (3) (b), by March 31 of the following year, and
- (b) provide other reporting as directed by the chief inspector.
- (2) The manager must
  - (a) ensure that reasonable efforts are made to engage with each affected First Nation in order for each First Nation to identify if it wants to receive any of the documents described in subsection (1) (a) (i) and (ii), and
  - (b) provide to each First Nation a copy of each of the most recent documents identified by the First Nation under paragraph (a) of this subsection, in accordance with the timeframe applicable with respect to the chief inspector.

## **10.4 TSFs and Dams – Responsibilities**

### **Engineer of Record**

- 10.4.1** (1) The manager must ensure that a professional engineer, who has the technical expertise and experience commensurate with the complexity of the TSF or dam, is retained as the engineer of record for each TSF and dam.
- (2) The manager must, within 72 hours of an engineer of record accepting the role, provide the chief inspector with the engineer of record's written acknowledgement that the engineer of record
- (a) has the commensurate expertise and experience referred to in subsection (1), and
  - (b) is accepting the role of engineer of record.
- (3) The manager must provide the chief inspector with the engineer of record's written notification that the engineer of record is departing from the role of engineer of record, within 72 hours of receiving the notification.
- (4) A reference to the engineer of record in this Part includes the qualified professionals under the supervision of the engineer of record, except with respect to
- (a) the references to engineer of record in this section and sections 10.4.4, 10.6.2 (3) (a) and (b), 10.6.4 (3) and (4), 10.6.6 (7) (b), 10.6.7 (7) (b) and 10.6.9 (2), and

- (b) the second reference to engineer of record in sections 10.5.2 (2), 10.5.3 (2) and 10.5.4 (2) (a).

#### **TSF Qualified Person and Dam Qualified Person**

- 10.4.2** (1) The manager must
- (a) designate a TSF qualified person for safe management of each TSF,
  - (b) designate a dam qualified person for safe management of each dam not associated with a TSF,
  - (c) provide to the chief inspector a written acknowledgement,
    - (i) signed by the manager, that each qualified person referred to in paragraph (a) or (b) has the technical expertise and experience commensurate with the complexity of the TSF or dam, as applicable, and
    - (ii) signed by the qualified person, confirming the person accepts the role of qualified person under paragraph (a) or (b), as applicable, and
  - (d) if the qualified person under paragraph (a) or (b) changes, notify the chief inspector within 72 hours.
- (2) A qualified person referred to in subsection (1) (a) or (b) must, as a result of the person's knowledge, training and experience,
- (a) be qualified to organize, supervise and perform duties related to the safe management of the TSF or dam, as applicable,
  - (b) be familiar with the provisions of the *Mines Act*, the code and the regulations that apply to the safe management of TSFs or dams, as applicable,
  - (c) be capable of identifying potential or actual danger to people or the environment as it relates to TSFs or dams, as applicable, and
  - (d) be the holder of a supervisor's certificate, as required under section 1.12.7 of this code.

#### **Independent Tailings Review Board**

- 10.4.3** (1) The manager of a mine with one or more tailings storage facilities must establish an Independent Tailings Review Board, unless exempted by the chief inspector.
- (2) The manager must ensure that reasonable efforts are made to engage with affected First Nations regarding the establishment of the Independent Tailings Review Board prior to requesting an exemption as set out in subsection (1).
- (3) The manager must ensure that the composition and qualifications of the Independent Tailings Review Board is commensurate with the complexity of the TSF.
- (4) The manager must provide to the chief inspector
- (a) a list of the Independent Tailings Review Board members and their qualifications, and
  - (b) an update when the Board's membership changes.
- (5) The manager must ensure that terms of reference for the Independent Tailings Review Board are developed, and updated, taking into consideration the complexity of the TSF.

- (6) The manager must make an annual report of the activities of the Independent Tailings Review Board that describes the following:
  - (a) a summary of the reviews conducted that year, including the number of meetings, topics discussed and attendees;
  - (b) whether the work reviewed that year meets the Board's expectations of good practice;
  - (c) any conditions that the Board is aware of that may compromise tailings storage facility integrity;
  - (d) signed acknowledgement by the members of the Board, confirming that the report is a true and accurate representation of their reviews.
- (7) The manager must provide to the chief inspector the annual report referred to in subsection (6) by March 31 of the following year.
- (8) The manager must
  - (a) ensure that reasonable efforts are made to engage with each affected First Nation in order for each First Nation to identify if it wants to receive any of the documents described in subsections (4) and (6), and
  - (b) provide to each First Nation a copy of each of the most recent documents identified by the First Nation under paragraph (a) of this subsection, in accordance with the timeframe applicable with respect to the chief inspector.

#### **Duty to Report Unresolved Safety Issues**

- 10.4.4** (1) If the manager receives written notification from the engineer of record that a TSF or dam safety deficiency is not being addressed in an appropriate time period, the manager must, within 72 hours of receiving the written notification,
- (a) report the deficiency to the chief inspector, and
  - (b) provide a copy of the report referred to in paragraph (a) to the engineer of record.
- (2) If the manager does not provide the report to the chief inspector and the engineer of record in accordance with subsection (1), the engineer of record must, within 72 hours immediately following the expiration of 72-hour period set out in subsection (1), report the unaddressed TSF or dam safety deficiency to the chief inspector.

## **10.5 TSFs and Dams – Design**

#### **Design Responsibility**

- 10.5.1** The manager must ensure that tailings storage facilities and dams are designed by, or under the direct supervision of, the engineer of record.

#### **Site Characterization**

- 10.5.2** (1) The manager must ensure that the engineer of record develops a site characterization for each TSF and dam, which supports the design of the TSF or dam, and includes the following:
- (a) climate, hydrology and climate change;
  - (b) summary of environmental setting;



- (c) site surficial geology, geomorphology and geohazards;
  - (d) bedrock geology, geotechnical conditions, hydrogeology and seismotectonic conditions;
  - (e) representative plans and cross-sections of interpreted geological and geotechnical units, and groundwater conditions;
  - (f) a signed and sealed assurance statement, in a form specified by the chief inspector.
- (2) The manager must ensure that the site characterization for the TSF or dam is reviewed and updated by the engineer of record when the engineer of record considers it appropriate.
  - (3) The manager must ensure that, when the site characterization for the TSF or dam is developed or reviewed,
    - (a) reasonable efforts are made to engage with affected First Nations, and
    - (b) local Indigenous knowledge received under paragraph (a) is considered.

### **Design Report**

- 10.5.3** (1) The manager must ensure that, for each TSF and dam, a design report is developed by the engineer of record, that includes
- (a) an analysis of the following, to support the design of the TSF or dam:
    - (i) the site characterization as set out under section 10.5.2;
    - (ii) tailings characterization and management, in the case of TSFs;
    - (iii) the consequences of potential failure scenarios as set out under section 10.5.6;
    - (iv) the risk assessment as set out under section 10.6.8;
    - (v) stability, deformation and other assessments, as considered appropriate by the engineer of record;
    - (vi) seepage and groundwater management;
    - (vii) water balance and water management;
    - (viii) closure,
  - (b) consideration of the following:
    - (i) mining or tailings processes;
    - (ii) environmental factors;
    - (iii) hydrological conditions and other conditions associated with climate change,
  - (c) a description of the proposed quantifiable performance objectives, and
  - (d) the design summary document developed or updated, as appropriate, under section 10.5.4 (1).
- (2) The manager must ensure that the design report developed under subsection (1) is reviewed and updated by the engineer of record when the engineer of record considers it appropriate.
  - (3) The manager must ensure that, when the design report is developed or reviewed,
    - (a) reasonable efforts are made to engage with affected First Nations, and
    - (b) local Indigenous knowledge received under paragraph (a) is considered.

## **Design Summary Document**

- 10.5.4** (1) The manager must ensure that the engineer of record develops a design summary document that summarizes the items listed in section 10.5.3 (1) (a) to (c) in the form of a table specified by the chief inspector.
- (2) The manager must ensure the design summary document is
- (a) reviewed and updated by the engineer of record when the engineer of record considers it appropriate, and
  - (b) provided to the chief inspector by March 31 of the year following the year it is updated.
- (3) The manager must
- (a) ensure that reasonable efforts are made to engage with each affected First Nation in order for each First Nation to identify if it wants to receive the design summary document as developed under subsection (1) or updated under subsection (2), whichever is the most recent, and
  - (b) provide a copy of the most recent document to each First Nation that identifies under paragraph (a) of this subsection, it wants to receive it, in accordance with the timeframe applicable with respect to the chief inspector.

## **Failure and Breach or Runout Assessment**

- 10.5.5** (1) The manager must ensure the engineer of record develops a failure and breach or runout assessment for each TSF and dam that contains the following:
- (a) an analysis of the failure modes and the expected results of each failure mode;
  - (b) potential dam failure scenarios;
  - (c) estimates of inundation or runout areas, if applicable;
  - (d) estimates of breach and arrival times, if applicable.
- (2) The manager must ensure that the assessment under subsection (1) is reviewed by the engineer of record and updated prior to a material change to the design, construction, operation or downstream conditions that has affected or may affect the potential inundation or run out area.
- (3) If, before the date this section comes into force, a breach and inundation study or a failure runout assessment was completed in accordance with section 10.1.11 of the code, as it read immediately before its repeal,
- (a) the manager must ensure that, before May 1, 2026, the engineer of record updates the study or assessment so that the requirements of subsection (1) (a) to (d) of this section are met,
  - (b) despite its repeal, section 10.1.11, as it read immediately before its repeal, continues to apply with respect to the study or assessment until the study or assessment is updated in accordance with paragraph (a) of this subsection, and
  - (c) on the date this section comes into force, the manager must comply with subsection (2) of this section with respect to the study or assessment, before and after it is updated in accordance with paragraph (a) of this subsection.

- (4) If, before the date this section comes into force, a breach and inundation study or failure runout assessment was not completed in accordance with section 10.1.11, as it read immediately before its repeal, the manager is not required to comply with subsections (1) and (2) of this section until May 1, 2026.

**Classification of TSFs and Dams**

- 10.5.6** (1) The manager must ensure that, for each TSF and dam, the engineer of record
- (a) determines the potential failure scenarios to be used to determine the consequences of the potential failure scenarios as described in Table 10-3, and
  - (b) reviews the failure and breach or runout assessment as set out in section 10.5.5 in making the determination under paragraph (a).
- (2) The manager must ensure that the engineer of record documents the following for each TSF and dam:
- (a) a determination, in accordance with Table 10-3, of the consequences of potential failure scenarios for the TSF or dam with input from other qualified professionals and persons with relevant areas of knowledge, as needed and appropriate;
  - (b) changes to the consequences of potential failure scenarios.
- (3) The manager must ensure that, in determining the consequences of potential failure scenarios referred to in subsection (2) (a),
- (a) reasonable efforts are made to engage with potentially affected First Nations, and
  - (b) local Indigenous knowledge received under paragraph (a) is considered.

**Table 10-3 Consequences of Potential TSF or Dam Failure Scenarios**

Consequence of Potential TSF or Dam Failure Scenarios	Potential Losses			
	Potential Loss of Life	Environment	Health, Social & Cultural	Infrastructure and Economics
<b>Low</b>	none	Minimal short-term loss of environmental values. No expected impact on livestock or fauna drinking water. Limited area of impact and restoration feasible in short term.	Minimal effects and disruption of business and livelihood. No measurable effects on human health. No disruption of heritage, recreation, community or cultural assets.	Low economic loss: area contains limited infrastructure or services.
<b>Significant</b>	none	Limited loss or deterioration of environmental values. Potential contamination of livestock or fauna water supply. Moderate area of impact and restoration possible.	Limited effects and disruption of business and livelihood. No measurable effects on human health. Limited loss of regional heritage, recreation, community or cultural assets.	Moderate economic loss: losses to recreational facilities, seasonal workplaces and infrequently used transportation routes.

Consequence of Potential TSF or Dam Failure Scenarios	Potential Losses			
	Potential Loss of Life	Environment	Health, Social & Cultural	Infrastructure and Economics
<b>High</b>	1 - 10	Significant loss or deterioration of critical environmental values. Potential contamination of livestock or fauna water supply. Potential area of impact 5 km <sup>2</sup> to 20 km <sup>2</sup> . Restoration possible within a moderate time frame.	Many people affected by disruption of business, services or social dislocation. Significant loss of regional heritage, recreation, community or cultural assets. Potential for some short-term human health effects.	High economic loss: losses affecting infrastructure, public transportation, commercial facilities or employment. Moderate relocation costs and/or compensation to communities.
<b>Very High</b>	10 to 100	Major loss or deterioration of critical environmental values including rare and endangered species of high significance. Potential area of impact >20 km <sup>2</sup> . Restoration or compensation possible but very difficult and requires a moderate to long time frame.	A high number of people affected by disruption of business, services or social dislocation for more than one year. Significant loss of national heritage, recreation, or community facilities or cultural assets. Significant long-term human health effects.	Very high economic loss: losses affecting important infrastructure, services (e.g., highway, industrial facilities or storage facilities for dangerous substances) or employment. High relocation costs and/or compensation to communities.
<b>Extreme</b>	> 100	Catastrophic loss of critical environmental values including rare and endangered species of high significance. Very large areas of potential impact. Restoration or compensation in kind impossible or requires a very long time.	A large number of people affected by disruption of business, services, or social dislocation for years. Significant national heritage or community facilities or cultural assets destroyed. Potential for Severe and/or long-term human health effects.	Extreme economic loss: losses affecting critical infrastructure or services (e.g., hospital, major industrial complex, major storage facilities for dangerous substances or employment. Very high relocation costs and/or compensation to communities and very high social readjustment costs.

### Seismic and Flood Design Criteria

- 10.5.7** (1) The manager must ensure that the engineer of record designs each TSF or dam so it meets the minimum seismic and flood criteria set out in Table 10-4.
- (2) The manager must ensure that, if a dam contains flowable tailings or water containing tailings, it meets the seismic and flood criteria set out in Table 10-4 for TSFs.
- (3) The manager must ensure that the engineer of record designs the inflow design flood of each TSF or dam so that it addresses the following:
- (a) evaluation of scenarios of frequency, intensity and duration to identify controlling events;
  - (b) consideration of rain or snow;
  - (c) consideration of the effect of the seasons.
- (4) The manager must ensure that the criteria respecting the environmental design flood is determined by the engineer of record.

- (5) The manager must ensure that, when the criteria respecting the environmental design flood criteria is determined,
- (a) reasonable efforts are made to engage with affected First Nations, and
  - (b) local Indigenous knowledge received under paragraph (a) is considered.
- (6) Despite subsection (1), the manager may, for final closure of a TSF or dam classified as low consequence of potential failure as set out Table 10-3, apply to the chief permitting officer for an exemption to the final closure flood criteria, final closure seismic criteria, or both, as set out in Table 10-4.
- (7) Subject to subsection (8), if, on the date this section comes into force, a TSF or dam exists and the manager does not meet a requirement as set out in subsections (1) to (5) of this section, with respect to the TSF or dam,
- (a) the manager is not required to meet the requirement with respect to the TSF or dam until November 1, 2026, and
  - (b) despite its repeal, section 10.1.8 of the code, as it read immediately before its repeal, continues to apply to the TSF or dam in respect of the subject matter of the requirement referred to in paragraph (a) of this subsection, until the earlier of the following:
    - (i) the manager meets the requirement;
    - (ii) November 1, 2026.
- (8) If, immediately before the date this section comes into force, an exception respecting section 10.1.8, as set out in section 10.1.19 (2) of the code, as it read immediately before its repeal, applied to a TSF or dam, the exception continues to apply to the TSF or dam until the earlier of the following:
- (a) section 10.2.10 (2) applies to the TSF or dam;
  - (b) November 1, 2026.

**Table 10-4 Minimum Seismic and Flood Criteria – Annual Exceedance Probability**

Failure Consequence Classification	Flood Criteria			Seismic Criteria		
	TSFs	Dams	Final Closure	TSFs	Dams	Final Closure
Low	1/3 <sup>rd</sup>	1/200	PMF	1/2,475	1/200	1/10,000 or MCE
Significant	Between 1/1,000 and PMF	between 1/200 and 1/1,000			between 1/200 and 1/1,000	
High	1/3 <sup>rd</sup> Between 1/1,000 and PMF			1/2,475		
Very High	2/3 Between 1/1,000 and PMF			½ Between 1/2,475 and 1/10,000 or MCE		
Extreme	PMF			1/10,000 or MCE		

**Footnotes for Table 10-4**

PMF means Probable Maximum Flood

### **Design Slopes**

- 10.5.8** (1) For a TSF or dam that has an overall downstream slope steeper than 2H:1V, the manager must submit justification by the engineer of record for the selected design slope and receive authorization by the chief permitting officer prior to construction.
- (2) Subject to subsection (3), if, on the date this section comes into force, a TSF or dam exists and has an overall downstream slope steeper than 2H:1V,
- (a) the manager is not required to comply with subsection (1) of this section with respect to the TSF or dam until November 1, 2026, and
  - (b) despite its repeal, section 10.1.9 of the code, as it read immediately before its repeal, continues to apply to the TSF or dam until the earlier of the following:
    - (i) the manager complies with subsection (1) of this section;
    - (ii) November 1, 2026.
- (3) If, immediately before the date this section comes into force, an exception respecting section 10.1.9, as set out in section 10.1.19 (2) of the code, as it read immediately before its repeal, applied to a TSF or dam, the exception continues to apply to the TSF or dam until the earlier of the following:
- (a) section 10.2.10 (2) applies to the TSF or dam;
  - (b) November 1, 2026.

### **Minimum Factors of Safety**

- 10.5.9** (1) The manager must ensure that all TSFs and dams meet the criteria for minimum factors of safety set out in Table 10-5.
- (2) If a TSF or dam has a calculated factor of safety that is less than the criteria for minimum factors of safety set out in Table 10-5 that must be met under subsection (1), the manager must submit justification by the engineer of record for the selected factor of safety and receive authorization by the chief permitting officer prior to construction.
- (3) Subject to subsection (4), if, on the date this section comes into force, a TSF or dam exists,
- (a) the manager is not required to comply with subsection (1) of this section with respect to the TSF or dam until November 1, 2026, and
  - (b) despite its repeal, section 10.1.10 of the code, as it read immediately before its repeal, continues to apply to the TSF or dam until the earlier of the following:
    - (i) the manager complies with subsection (1) of this section;
    - (ii) November 1, 2026.
- (4) If, immediately before the date this section comes into force, an exception respecting section 10.1.10, as set out in section 10.1.19 (2) of the code, as it read immediately before its repeal, applied to a TSF or dam, the exception continues to apply to the TSF or dam until the earlier of the following:
- (a) section 10.2.10 (2) applies to the TSF or dam;

(b) November 1, 2026.

**Table 10-5 Minimum Factors of Safety for TSFs and Dams**

Facility	Minimum Factors of Safety			
	Prior to storage of water and tailings	Operations and Closure	Rapid Drawdown – upstream slope where applicable	Post Seismic
TSF or dam	1.3	1.5	1.2 to 1.3	1.2

**Plans for Underground Dams and Bulkheads**

- 10.5.10**(1) The manager must ensure that issued for construction drawings, specifications, and quality assurance and quality control plans respecting structures for impounding water, restraining saturated material or confining air under pressure in an underground opening have been prepared by a professional engineer prior to construction.
- (2) The manager must ensure that, prior to using an underground structure referred to in subsection (1), a professional engineer verifies the structure has been constructed in a manner consistent with the drawings, specifications and plans referred to in subsection (1) and is suitable for the intended use.
- (3) Structures in subsection (1) required in the approved closure plan must be authorized by the chief permitting officer prior to construction.
- (4) Subsections (1) to (3) do not apply in the case of
- (a) a structure less than 1 m in height used solely for
    - (i) diverting the ordinary drainage, or
    - (ii) storing water for mining purposes, or
  - (b) ventilation bulkheads or regulators used solely for ordinary ventilation.
- (5) Despite subsection (1), a temporary dam or bulkhead may be constructed in an underground mine during an emergency without meeting the requirements of subsection (1) but no person may be allowed to work in any part of the underground mine that could be affected by the construction or failure of the dam or bulkhead until a professional engineer has verified that the structure is suitable for the intended use.

**10.6 TSFs and Dams – Operation and Closure**

**Management Systems**

- 10.6.1** The manager of a mine with one or more TSFs or dams must
- (a) develop and maintain a management system commensurate with the overall complexity of the TSFs and dams and include regular system audits, and
  - (b) ensure that local Indigenous knowledge received from a First Nation under this Part is not disclosed without prior written consent from the First Nation.

## **Dam Safety Review**

- 10.6.2** (1) The manager must ensure that a dam safety review report for each TSF or dam is prepared by an independent professional engineer at the frequency set out in Table 10-6.
- (2) The manager must ensure that the dam safety review report referred to in subsection (1) includes the following for each TSF or dam:
- (a) a summary describing the TSF or dam and its components;
  - (b) identification of material changes to the infrastructure TSF or dam since the previous review, as applicable;
  - (c) a review of the consequences of potential failure scenarios;
  - (d) a review of the design, construction, operation and monitoring of the facility and assessment of its performance;
  - (e) a review of the design summary document and design criteria;
  - (f) the findings of the dam safety review prepared under this section including any recommended actions and associated timelines;
  - (g) a signed and sealed assurance statement by a professional engineer, in a form specified by the chief inspector.
- (3) The manager must address each recommended action referred to in subsection (2) (f) by
- (a) ensuring the engineer of record reviews each recommended action and either accepts it or proposes an alternate course of action, and
  - (b) completing each recommended action or alternate course of action, as determined by the engineer of record under paragraph (a), within timelines agreed to with the engineer of record.
- (4) The manager must provide to the chief inspector the following documents:
- (a) the dam safety review report referred to in subsection (1), by June 1 of the year following the year the report is required to be prepared;
  - (b) an annual summary of all the TSF and dam safety recommended actions referred to in subsection (3) (a), by March 31 of the following year.
- (5) The manager must
- (a) ensure that reasonable efforts are made to engage with each affected First Nation in order for each First Nation to identify if it wants to receive any of the documents set out in subsection (4), and
  - (b) provide to each First Nation a copy of each of the most recent documents identified by the First Nation under paragraph (a) of this subsection, in accordance with the timeframe applicable with respect to the chief inspector.

**Table 10-6 Schedule of Dam Safety Review Periods**



Facility	Duration Between Dam Safety Reviews based on consequences of potential failure as determined under Table 10-3		
	Category 1A, 1B and 2 dams	Low	Significant to Extreme
TSF	Not required	10 years	5 years
Dam		Not required	5 years

### TSFs and Dams Register

- 10.6.3** (1) The manager must ensure that a register of all TSFs and dams, in a form specified by the chief inspector, is established and submitted to the chief inspector.
- (2) The manager must ensure that the register is annually updated and provided to the chief inspector by March 31 of the following year.
- (3) The manager must
- (a) ensure that reasonable efforts are made to engage with each affected First Nation in order for each First Nation to identify if it wants to receive the register established under subsection (1) or updated under subsection (2), whichever is the most recent, and
  - (b) provide a copy of the most recent register to each First Nation that identifies under paragraph (a) of this subsection it wants to receive it, in accordance with the timeframe applicable with respect to the chief inspector.

### Annual Facility Performance Report

- 10.6.4** (1) The manager must ensure that the engineer of record completes a facility performance report annually for each TSF or dam.
- (2) The annual facility performance report must include the following for each TSF or dam:
- (a) identification of whether the consequences of potential failure scenarios as described in Table 10-3 remain appropriate;
  - (b) a description of any material changes to the design, construction, operation and closure of each TSF and dam, their effect on the safety of the TSF or dam and whether they have been captured in the change register under section 10.6.9;
  - (c) a description of any updates to the design summary document and design criteria;
  - (d) a summary of construction and operation activities;
  - (e) a summary and analysis of the results of surveillance, instrumentation and monitoring;
  - (f) a review of potential TSF or dam failure modes during the review period;
  - (g) identification of whether the facility TSF or dam was operated during the review period according to the quantifiable performance objectives set out in section 10.5.3 (1) (c), and summarized and updated under section 10.5.4 and section 10.6.7 (6);
  - (h) incident reports;

- (i) TSF or dam safety recommended actions, including prioritization rankings and timelines for completion.
- (3) The manager must ensure that each TSF or dam safety recommended action included in the annual facility performance report under subsection (2) (i) is implemented within the timeline recommended under that provision unless the engineer of record agrees, in writing, to an alternate course of action or timeline, in which case the manager must ensure the alternate course of action or timeline is implemented.
- (4) The manager must ensure that the engineer of record provides a signed and sealed annual facility performance report assurance statement, in a form specified by the chief inspector.
- (5) The manager must annually provide to the chief inspector, by March 31 of the following year,
  - (a) the facility performance report referred to in subsection (1), and
  - (b) a summary of all the TSF and dam safety recommended actions, referred to in subsection (2) (i).
- (6) The manager must
  - (a) ensure that reasonable efforts are made to engage with each affected First Nation in order for each First Nation to identify if it wants to receive any of the documents referred to in subsection (5), and
  - (b) provide to each First Nation a copy of each of the most recent documents identified by the First Nation under paragraph (a) of this subsection, in accordance with the timeframe applicable with respect to the chief inspector.

## **Construction**

- 10.6.5** (1) The manager must ensure that the following documents are prepared by the engineer of record for each TSF or dam:
- (a) issued for construction drawings;
  - (b) issued for construction specifications;
  - (c) a summary of milestones and key timelines associated with constructing the TSF or dam;
  - (d) quality assurance and quality control requirements that meet the issued for construction specifications referred to in paragraph (b).
- (2) The manager must ensure that the engineer of record has verified, in a form specified by the chief inspector, that the TSF or dam is ready to receive tailings or water prior to use and submitted the signed and sealed verification to the chief inspector prior to the TSF or dam receiving the tailings or water.
- (3) The manager must ensure that the engineer of record completes a construction records report when construction begins on a TSF or dam, and annually until construction is completed, and includes the following respecting the construction of the TSF or dam:
- (a) geotechnical foundation conditions;
  - (b) as constructed representative cross-sections;
  - (c) quality assurance and quality control data;

- (d) interpretation of the data;
  - (e) a description of any unforeseen deviations or material changes from subsection (1) (a) or (b);
  - (f) installed instrumentations.
- (4) The manager must ensure that the construction records report includes a signed and sealed assurance statement, in a form specified by the chief inspector, from the engineer of record that the facility substantially complies in all material respects with the original design intent and that the TSF or dam is suitable for use.
- (5) Unless otherwise stated in the permit, the manager must provide to the chief inspector
- (a) the documents set out in subsection (1), prior to each stage of construction, and
  - (b) the construction records report as referred to in subsection (3), by June 1 of the year following the year the report is required to be completed.
- (6) The manager must
- (a) ensure that reasonable efforts are made to engage with each affected First Nation in order for each First Nation to identify if it wants to receive any of the documents described in subsections (5) (a) and (b), and
  - (b) provide to each First Nation a copy of each of the most recent documents identified by the First Nation under paragraph (a) of this subsection, in accordance with the timeframe applicable with respect to the chief inspector.

#### **Operations, Maintenance and Surveillance (OMS) Manual**

- 10.6.6** (1) The manager must ensure an Operations, Maintenance and Surveillance (OMS) Manual is prepared by one or more qualified persons for each TSF or dam respecting the operations and closure of the TSF or dam.
- (2) The manager must ensure that the OMS Manual is reviewed by the engineer of record, unless it is prepared by the engineer of record.
- (3) Prior to implementation of the OMS Manual, the manager must
- (a) ensure that recommendations from the engineer of record, after a review under subsection (2), are addressed, and
  - (b) review and approve the OMS manual.
- (4) The manager must ensure that the OMS Manual is implemented prior to the initial filling of the TSF or dam with tailings or water.
- (5) The OMS Manual must include the following:
- (a) a description of roles, responsibilities and training requirements;
  - (b) consequences of potential failure scenarios and key design requirements of the TSFs and dams;
  - (c) an instrumentation, monitoring and surveillance plan;
  - (d) the quantifiable performance objectives set out in section 10.5.3 (1) (c), and summarized and updated under section 10.5.4 and section 10.6.7 (6);

- (e) trigger action response plans in cases of escalating changes of dam safety conditions set out in section 10.6.7 (6);
  - (f) maintenance and testing requirements for key equipment for safe operation of the TSF or dam.
- (6) The manager must ensure that all employees and contractors involved in the construction or operation of a TSF or dam are trained and qualified, based on the OMS Manual, prior to commencing work at the TSF or dam.
  - (7) The manager must ensure that the OMS Manual is
    - (a) reviewed annually by the TSF qualified person or dam qualified person, as applicable, and the engineer of record, and
    - (b) updated when the engineer of record considers it appropriate.
  - (8) The manager must ensure that, whenever the OMS Manual is updated, employees and contractors are provided with additional training, as appropriate.
  - (9) The manager must keep the OMS Manual on site and make it available to an inspector on request.
  - (10) If, before the date this section comes into force, an OMS manual was prepared in accordance with section 10.5.2 of the code, as it read immediately before its repeal,
    - (a) the manager must ensure that, before May 1, 2025, one or more qualified persons updates the manual so that the requirements of subsection (5) of this section are met, and
    - (b) subsection (4) of this section does not apply with respect of the manual.

## **Water Management**

- 10.6.7** (1) The manager must ensure that a qualified professional develops an overall site water balance and overall water management plan for the mine.
- (2) The manager must ensure that a qualified professional
    - (a) reconciles the overall site water balance annually, and
    - (b) updates the overall water management plan when there are material changes.
  - (3) The manager must ensure that, when the overall site water balance and overall water management plan is developed under subsection (1) or the overall site water balance is reconciled under subsection (2),
    - (a) reasonable efforts are made to engage with affected First Nations, and
    - (b) local Indigenous knowledge received under paragraph (a) is considered.
  - (4) The manager must ensure that a qualified professional develops a water balance and water management plan for each TSF and dam that is
    - (a) integrated with the overall site water balance and overall water management plan referred to in subsection (1), and
    - (b) based on the design summary document as set out in section 10.5.4.
  - (5) Respecting the water balance and water management plan referred to in subsection (4), the manager must ensure that a qualified professional
    - (a) reconciles the water balance annually, and

- (b) updates the water management plan when there are material changes.
- (6) The manager must ensure the engineer of record
  - (a) develops quantifiable performance objectives, and trigger action response plans in cases of escalating changes of dam safety conditions, that are informed by the water balance and water management plan for the TSF or dam, and
  - (b) reviews and updates the quantifiable performance objectives, and trigger action response plans, as set out in paragraph (a) when the engineer of record considers it appropriate.
- (7) The manager must ensure that
  - (a) the quantity of water predicted by the water balance can be safely stored, and
  - (b) surplus water balances are reduced in accordance with a plan approved by the engineer of record.
- (8) The manager must ensure that the water balance and water management plans for each TSF or dam referred to in subsection (4) include the following:
  - (a) water usage, water sources and discharges from the mine;
  - (b) layout of all water management infrastructure;
  - (c) location of monitors and methods;
  - (d) water balance schematics;
  - (e) climate conditions and hydrology;
  - (f) groundwater and surface water interactions;
  - (g) water balance projections.
- (9) The manager must immediately notify the chief inspector and affected communities and First Nations if any water discharged without a permit occurs or is necessary.
- (10) The manager must provide to the chief inspector
  - (a) the annual reconciliation of the overall site water balance referred to in subsection (2), by March 31 of the year following the year it is reconciled,
  - (b) the updated overall water management plan referred to in subsection (2), by March 31 of the year following the year it is updated, and
  - (c) the updated water management plan referred to in subsection (5), by March 31 of the year following the year it is updated.
- (11) The manager must
  - (a) ensure that reasonable efforts are made to engage with each affected First Nation in order for each First Nation to identify if it wants to receive any of the documents referred to in subsection (10), and
  - (b) provide to each First Nation a copy of each of the most recent documents identified by the First Nation under paragraph (a) of this subsection, in accordance with the timeframe applicable with respect to the chief inspector.
- (12) If, before the date this section comes into force, an overall site water balance was completed in accordance with section 10.1.3 (d) (xi) of the code, as it read

immediately before its repeal, and an overall water management plan was completed in accordance with section 10.1.3 (d) (vi) of the code, as it read immediately before its repeal,

- (a) the manager is not required to comply with subsections (1), (2), (3), (10) (a) and (b) and (11) of this section, with respect to the overall site water balance and overall water management plan, until March 30, 2026, and
  - (b) despite their repeal, sections 10.1.3 (d) (vi) and 10.1.3 (d) (xi), as they read immediately before their repeal, continue to apply to the overall site water balance and overall water management plan, respectively, until the earlier of the following:
    - (i) the manager complies with subsections (1), (2), (3), (10) (a) and (b) and (11) of this section;
    - (ii) March 30, 2026.
- (13) If, before the date this section comes into force, a water balance and water management plan was completed for a TSF or dam in accordance with section 10.1.12 (1) of the code, as it read immediately before its repeal,
- (a) the manager is not required to comply with subsections (4) (a) and (8) of this section in respect of the water balance and water management plans until March 30, 2026,
  - (b) despite its repeal, section 10.1.12 (1), as it read immediately before its repeal, continues to apply to the water balance and water management plan until the earlier of the following:
    - (i) the manager complies with subsections (4) (a) and (8) of this section;
    - (ii) March 30, 2026, and
  - (c) subject to subsection (14) of this section, the manager must provide to the chief inspector the annual reconciliation of the water balance by March 31 of the year following the year it is reconciled.
- (14) Subsection (13) (c) of this section ceases to apply after the annual reconciliation of the water balance that is due by March 31, 2025 is provided to the chief inspector.

### **Risk Assessment**

- 10.6.8** (1) Prior to the initial filling of the TSF or dam with tailings or water, the manager must ensure that a risk assessment is prepared by a qualified professional, with experience commensurate with the complexity of the TSF or dam, that documents the likelihood of potential failure scenarios and the consequences of potential failure scenarios.
- (2) The manager must ensure that the engineer of record annually reviews the risk assessment to ensure that the following, at a minimum, are current and appropriate to manage risks:
- (a) the quantifiable performance objectives set out in section 10.5.3 (1) (c), and summarized and updated under section 10.5.4, and section 10.6.7 (6);
  - (b) the operating and monitoring requirements set out in the Operations Maintenance and Surveillance Manual prepared under section 10.6.6.

## **Change Register**

- 10.6.9** (1) The manager must develop and maintain a change register, in consultation with the engineer of record, to track material changes to the design, construction, operation and closure of each TSF and dam.
- (2) The manager must ensure that the engineer of record acknowledges and addresses all material changes entered into the change register.
- (3) The manager must ensure that the change register is made available to an inspector on request.

## **Emergency Preparedness and Response Plan**

- 10.6.10**(1) The manager must develop an Emergency Preparedness and Response Plan (EPRP) for potential TSF or dam failures that is included in the Mine Emergency Response Plan (MERP) required under section 3.7.1 (2) (c) and that contains the following minimum components:
- (a) one or more maps showing potential impact zones and potentially affected infrastructure;
  - (b) emergency escalation levels detailing escalation triggers;
  - (c) stakeholders, potentially affected First Nations and community warnings and notifications;
  - (d) emergency responses and procedures including evacuation of mine personnel;
  - (e) roles, responsibilities and contact information of key personnel.
- (2) The manager must ensure that testing of the Emergency Preparedness and Response Plan is conducted in accordance with the following:
- (a) functional tests of parts of the plan are conducted annually;
  - (b) a functional test of the full plan is conducted, at a minimum, every 3 years;
  - (c) reasonable efforts are made to include potentially affected communities and potentially affected First Nations in the testing under paragraphs (a) and (b).
- (3) The manager must ensure that
- (a) all identified issues or recommendations as a result of the testing under subsection (2) (a) and (b) are addressed, and
  - (b) the Emergency Preparedness Response Plan is kept up to date.
- (4) If, before the date this section comes into force, an Emergency Preparedness and Response Plan was made for a TSF or dam in accordance with section 10.4.2 (1) (e), as it read immediately before its repeal,
- (a) the manager must, before May 1, 2025, update the plan so that the requirements of subsection (1) of this section are met, and
  - (b) despite its repeal, section 10.4.2 (1) (e), as it read immediately before its repeal, continues to apply with respect to the plan until the earlier of the following:
    - (i) the plan has been updated in accordance with paragraph (a) of this subsection;
    - (ii) May 1, 2025.

## **Climate Change**

- 10.6.11** (1) The manager must engage qualified professionals to assess the hydrological and climate conditions, and other relevant conditions associated with climate change, for each TSF and dam at least every 5 years.
- (2) The climate change assessment described in subsection (1) must be reviewed by the engineer of record for the TSF or dam and incorporated into the design summary document as set out in section 10.5.4.

## **Closure Design Report for a TSF or Dam**

- 10.6.12** (1) The manager must ensure that, for each TSF or dam, the engineer of record develops a closure design report that shows how closure of the TSF or dam is feasible.
- (2) Despite subsection (1), if, on the date this subsection comes into force, a closure design report for each TSF and dam as described in subsection (1) has not already been submitted to the chief permitting officer under section 10.2.2 (i), the manager must, within 3 years after the date this subsection comes into force,
- (a) ensure the engineer of record develops a closure design report for each TSF or dam in accordance with subsection (1), and
  - (b) provide each closure design report referred to in paragraph (a) of this subsection to the chief inspector.
- (3) The manager must ensure that each closure design report referred to in subsection (1) or (2) (a) is
- (a) updated by the engineer of record at least every 5 years, and
  - (b) provided to the chief inspector by March 31 of the year following the update.
- (4) No less than 3 years prior to a planned closure of a TSF or dam, the manager must
- (a) ensure that the engineer of record updates the closure design report for the TSF or dam that shows in detail
    - (i) how the TSF or dam will achieve closure, and
    - (ii) the schedule for implementation, and
  - (b) provide the closure design report to the chief inspector by March 31 of the year following the update.
- (5) If a closure design report is provided to the chief inspector under subsection (4) (b) and, subsequently, the permit respecting the TSF or dam is extended so that the planned closure date is 5 years or longer from the date the updated report is provided to the chief inspector, the manager may update and provide the closure design report of the TSF or dam in accordance with subsection (3) (a) and (b), until such time as subsection (4) applies with respect to the TSF or dam.
- (6) A closure design report developed or updated under this section must
- (a) address the following:
    - (i) physical stability for potential long-term changes to slope stability, floods and water erosion, and other natural or mine-induced hazards;



- (ii) long-term prevention, mitigation and management of metal leaching and acid rock drainage for the offsite release of mine-affected groundwater and surface water;
    - (iii) ecological and landform aspects that influence closure;
    - (iv) land and water use objectives,
  - (b) include the following:
    - (i) a design of permanent spillways and other necessary civil works;
    - (ii) a cost estimate and schedule for implementation;
    - (iii) a long-term monitoring plan, and
  - (c) demonstrate how the TSF or dam will meet the criteria for final closure as set out in Table 10-4, subject to section 10.5.7 (6).
- (7) The manager must ensure that, in developing the land and water use objectives referred to in subsection (6) (a) (iv),
- (a) reasonable efforts are made to engage with local communities and affected First Nations, and
  - (b) local Indigenous knowledge received under paragraph (a) is considered.
- (8) The manager must
- (a) ensure that reasonable efforts are made to engage with each affected First Nation in order for each First Nation to identify if it wants to receive each closure design report developed or updated under this section, whichever is the most recent, and
  - (b) provide a copy of the most recent report to each First Nation that identifies under paragraph (a) of this subsection it wants to receive it, in accordance with the timeframe applicable with respect to the chief inspector.
- (9) If, on the date this section comes into force, the planned closure of a TSF or dam is less than 3 years, or a TSF or dam is inactive, the manager must,
- (a) within 3 years after the date this section comes into force,
    - (i) ensure that the engineer of record updates the closure design report for the TSF or dam that shows in detail
      - (A) how the TSF or dam will achieve closure, and
      - (B) the schedule for implementation, and
    - (ii) provide the closure design report to the chief inspector by March 31 of the year following the update, and
  - (b) in meeting the requirements of paragraph (a) of this subsection, comply with subsections (6), (7) and (8).

**Closed Tailings Storage Facility or Dams**

- 10.6.13**(1) A tailings storage facility that has not been operated for a period of 12 or more months may be declared closed by the chief inspector.
- (2) If the chief inspector declares a TSF closed under subsection (1), the manager
- (a) must not reactivate the TSF unless the chief permitting officer grants another permit that allows the reactivation, and

- (b) must not deposit tailings into the TSF unless the TSF has been reactivated in accordance with paragraph (a).
- (3) The manager of a TSF or dam that has achieved final closure and approval of the engineer of record may apply to the chief permitting officer for the release of permit obligations under the *Mines Act*.
- (4) If the manager of a TSF or dam has completed substantial work towards final closure of the TSF or dam but has not been granted release of permit obligations as referred to in subsection (3), the manager may apply for permit amendments to reduce requirements under this code related to the TSF or dam.
- (5) The manager must apply for a permit from the chief permitting officer when a closed TSF or dam is to be altered or used for some other purpose than storage of tailings.

## **10.7 Waste Dumps, Pits and Underground**

### **Major Dumps**

- 10.7.1** (1) Major dumps must be operated and monitored in accordance with the Interim Guidelines of the British Columbia Mine Waste Rock Pile Research Committee.
- (2) The manager must annually provide to the chief inspector a document that describes the performance of high-risk dumps referred to in subsection (1), by March 31 of the following year.
  - (3) The manager must
    - (a) ensure that reasonable efforts are made to engage with each affected First Nation in order for each First Nation to identify if it wants to receive the document referred to in subsection (2), and
    - (b) provide a copy of the most recent document to each First Nation that identifies under paragraph (a) of this subsection that it wants to receive it, in accordance with the timeframe applicable with respect to the chief inspector.

### **Spontaneous Combustible Material**

- 10.7.2** Material with a high probability of spontaneous combustion must be placed in a separate dump.

### **Materials Inventory**

- 10.7.3** (1) Where required for the control of metal leaching and acid rock drainage, the owner, agent or manager must maintain an inventory of identified material that includes the following:
- (a) composition, mass, volume, surface area and storage locations;
  - (b) history and timing of excavation;
  - (c) monitoring data;
  - (d) any other information required by the chief inspector.
- (2) On closure, the manager must submit the material inventory to the chief inspector.

### **Excavations Near Property Boundaries**

**10.7.4** The excavation of soil material, such as clay, silt, earth, sand or gravel, in a surface mine must 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 must 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 must not be removed without the written approval of the inspector.

### **Excavation Before April 1, 1997**

**10.7.5** 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 10.7.4.

### **Alternative Setbacks and Slopes**

**10.7.6** Despite sections 10.7.4 and 10.7.5, the chief permitting officer 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**

**10.7.7** Rock must not be excavated within a distance of 5 metres from the property boundary.

### **Waiver by Adjoining Property Owners**

**10.7.8** The owners of adjoining properties may, by agreement in writing, waive the provisions of sections 10.7.4, 10.7.5 and 10.7.7.

## **10.8 Mine Closure**

### **Notice Required**

**10.8.1** The owner, agent or manager must 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**

- 10.8.2** (1) If a mine ceases operation, the owner, agent or manager must
- (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 must
- (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**

- 10.8.3** (1) On the closure of a mine, the owner, agent or manager must, 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 metres 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 must be preserved as a permanent record in the office of the chief inspector.

### **Securing Openings**

- 10.8.4** When a mine is closed for an indefinite period, or otherwise left unattended for any length of time, the owner, agent or manager must 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**

- 10.8.5** The long-term stability of exposed slopes of any major dump must 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.

### **Ongoing Management Requirements**

- 10.8.6** Where a mine requires ongoing mitigation, monitoring or maintenance, the owner, agent or manager must 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 affect long-term mitigation, monitoring and maintenance requirements.

### **Security**

- 10.8.7** On the closure of a mine, and on the chief inspector being satisfied that some or all of the conditions of the permit have been complied with, the person who deposited a security under section 10 (4) or (5) of the *Mines Act* must be entitled to a refund of some or all of the security and any accumulated interest, less any amount paid out under section 10.1 (2) (c) of the *Mines Act*.

### **Application for Security Release**

- 10.8.8** An application for security release or a partial security release, that details the reclamation activities that have been completed under the requirements of the *Mines Act*, the code and approved reclamation plan, must be submitted to the chief inspector.

## **10.9 Reclamation Standards**

### **Reclamation Defined**

**10.9.1** 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 sections 10.9.4 to 10.9.21.

### **Pre-legislation Disturbances**

**10.9.2** 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 provision.

### **Exclusions**

**10.9.3** A reclamation standard prescribed under sections 10.9.4 to 10.9.21 does not apply if

- (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**

**10.9.4** The land surface must be reclaimed to an end land use approved by the chief permitting officer that considers previous and potential uses.

### **Capability**

**10.9.5** Excluding lands that are not to be reclaimed, the average land capability to be achieved on the remaining lands must not be less than 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 or geochemical stability, or both.

### **Long-term Stability**

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

### **Re-vegetation**

**10.9.7** On all lands to be re-vegetated, land must be re-vegetated to a self-sustaining state using appropriate plant species.

### **Growth Medium**

**10.9.8** On all lands to be re-vegetated,

- (a) the growth medium must satisfy land use, capability and water quality objectives, and
- (b) all surficial soil materials removed for mining purposes must be saved for use in reclamation programs unless these objectives can be otherwise achieved.

## **Landforms**

**10.9.9** Where practicable, land and watercourses must be reclaimed in a manner that is consistent with the adjacent landforms.

## **Structures and Equipment**

**10.9.10** Prior to abandonment, and unless exempted by the chief inspector,  
(a) all machinery, equipment and building superstructures must be removed,  
(b) concrete foundations must be covered and re-vegetated, and  
(c) all scrap material must be disposed of in a manner acceptable to an inspector.

## **Dumps**

**10.9.11** Dumps must be reclaimed to ensure long-term stability and long-term erosion control.

## **Watercourses**

**10.9.12** Watercourses must 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 must 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**

**10.9.13**(1) Pit walls constructed in overburden must 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 must be established.  
(4) Where the pit floor will impound water and 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 Road**

**10.9.14** All access roads to surface areas of the mine that may be dangerous must be effectively blocked to prevent inadvertent vehicular access.

## **Securing Openings**

**10.9.15**(1) All shafts, raises, stope openings, adits or drifts opening to the surface must 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 must be  
(a) secured to solid rock or to a concrete collar secured to solid rock, and

- (b) 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 of, or a potential for, use by wildlife, mine openings may be fitted with a barrier that allows wildlife passage but prevents human entry.

#### **Drains**

- 10.9.16** 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 must be installed.

#### **Metal Uptake**

- 10.9.17** When required by the chief inspector, vegetation must be monitored for metal uptake.

#### **Ecological Risk Assessment**

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

#### **Disposal of Chemicals and Reagents**

- 10.9.19** Chemicals or reagents that cannot be returned to the manufacturer must be disposed of in compliance with municipal, regional, provincial and federal statutes.

#### **Water Quality**

- 10.9.20** 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 must be implemented for as long as is necessary to mitigate the problem.

#### **Monitoring**

- 10.9.21** The owner, agent or manager must 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**

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