

**SCHEDULE D
TERRESTRIAL PERFORMANCE STANDARDS
FOR THE WOLVERINE PROJECT**

A. Overall Objectives

1. The protection of health and safety of the public and area wildlife by the elimination of unacceptable health hazards.
2. Reclamation for productive future use of the land where infrastructure (buildings, chemical and fuel storage, roads, sediment ponds, tailings facilities, waste rock storage areas, open pits, etc.) is or will be located.
3. Prevention of significant exposure to or release of substances that could damage the receiving environment.
4. Restoration of the site to a condition that is visually acceptable to the community.
5. Minimization or elimination of the need for maintenance and monitoring in the long term.
6. Minimization of liability and environmental risk.
7. Minimization of the footprint of mine site development.

B. Terrain Hazards

Objective

The protection of wildlife and public health and safety through measures to prevent and protect wildlife and persons from terrain hazards such as excavations and surface openings.

General Standards

1. Slope stability, which is to be demonstrated by the absence of landform features such as slides, cave-ins, slumping, gullies, potholes, and overhangs.
2. Subject to 3, below, reclaimed slope angles must be less than the angle of repose.
3. Any slopes exceeding the angle of repose (e.g. waste rock piles) must be shown to be stable.
4. Access to mine workings or borrow pits must be restricted where such access may pose a threat to human or wildlife safety.
5. Access to areas of unsafe drop-offs must be blocked and as required, posted appropriately.
6. Waste rock storage must be re-contoured to a stable configuration and left in a condition conducive to successful re-vegetation.

C. Erosion Control

Objective

Prevent erosion that significantly impacts drainage quality or impedes re-vegetation of reclaimed site.

General Standards

1. Slopes must be stabilized by contouring and levelling to provide land forms which conform to the surrounding terrain and provide suitable seedbeds.
2. Erosion features must be minimized on re-sloped surfaces such as gullies and rills.
3. Run-off must be diverted away from steep slopes (e.g. pit walls).
4. Vegetative mat must be sufficient to control erosion.
5. Adequate growth media (fines) must be present to sustain re-vegetation.
6. Appropriate settling ponds must be in place.
7. Diversion ditches must be constructed to guide drainage away from reclaimed workings, where necessary.

D. Re-vegetation

Objective

To restore wildlife habitat through the re-establishment of a vegetative mat (food source, cover, hide etc,) and self-sustaining native vegetation.

General Standards

1. Vegetation must be self-sustaining 3 to 5 years after the last application of re-seeding, maintenance or fertilization.
2. Re-vegetation, if required, must occur using native seed mixes.
3. The vegetative cover must be capable of self-regeneration without continued dependence on fertilizer or re-seeding.
4. Establishment of a vegetative cover with sufficient density and species diversity to stabilize the surface against the effects of long term erosion.
5. Successive vegetation must be similar to naturally occurring habitats in the surrounding area.
6. No uptake of metals by vegetation.

E. Watercourses

Objective

Restore watercourses to required standards.

General Standards

1. Watercourses must be restored in accordance with the approved closure plan.

F. Contaminated Soils

Objective

Prevent significant release of substances that could damage the receiving environment.

General Standards

1. Any contaminated land outside of the boundaries of a designated or properly managed contaminated area must be restored in accordance with the *Environment Act* and the Contaminated Sites Regulation. Contaminated soil, outside the properly managed area, must be treated or removed and placed in a designated and controlled site to ensure that the contaminated soil will not cause harm to public health or the environment.

G. Roads and Trails

Objective

Decommissioning of access corridors when they are no longer required.

General Standards

1. Culverts, pipes and rock drains must be removed.
2. Streambeds must be re-established with appropriate stabilization of banks.
3. Road fills and cuts must be stabilized.
4. Diversion berms must be installed on steep slopes.
5. Roads must be remediated and re-vegetated.
6. Road cuts must be stable and access restricted where there is a safety hazard or where access could impact fish or wildlife population.
7. Public access to be restricted with appropriate signage for areas posing a safety risk.

H. Buildings and Infrastructure

Objective

Removal or stabilization of any structures remaining after closure to ensure physical stability and to remove any threat to public health and safety, re-establishment of vegetative mat over the disturbed areas of the minesite, and removal of all hazardous substance.

General Standards

1. All buildings and structures must be dismantled and removed from the site to an extent that is consistent with the approved closure plan for the site.
2. Waste from dismantling and demolition must be removed from the site and reused or stored in an authorized waste disposal site.

3. All buried support infrastructures (tanks, pipes, underground services, etc.) must be removed or decommissioned in a safe, acceptable manner.
4. All buried infrastructure remaining must be identified on site closure maps.
5. All non-hazardous waste materials must be disposed of in an approved non-hazardous waste disposal site. The location and contents of disposal sites must be identified and recorded, with copies of this information provided to the Chief.
6. No hazardous substances shall remain onsite unless they are contained in an approved hazardous substances site and consistent with the final land use for the site.
7. In all areas where ore, concentrate, waste rock, solid wastes, special wastes, fuel and chemicals were stored or handled at the site, the soil will be tested for contaminants, and if contamination is found, the contaminated soil must be removed or treated based in accordance with an approved management plan.
8. All machinery, equipment, ore processing equipment, and storage tanks must be cleaned and removed from the site or disposed of on site in an approved manner.
9. After being emptied, decommissioned septic tanks must be removed or completely filled with gravel, sand, earth or inert material.
10. All concrete structures, foundations and slabs must be removed or covered with overburden and re-vegetated.
11. Sites of all buildings and structures must be reclaimed so as to blend in with surrounding topography.
12. Despite the generality of the above, contaminated soils remediation must be undertaken in accordance with the *Environment Act* and all other applicable requirements.
13. All power transmission lines, and pipelines must be dismantled and removed from the site to an extent that is consistent with the approved future use of the land
14. All waste storage sites must be closed and rehabilitated consistent with the approved final closure plan.
15. Reclamation plans must consider the health and safety of the public as well as persons involved in undertaking the work.
16. All explosives must be removed from the site or be properly disposed.

I. Rock Dumps

Objective

Reclaimed rock dumps are to be physically and chemically stable in the long term.

General Standards

1. Major dumps must be operated and monitored in accordance with the guidelines established in *Mined Rock and Overburden Piles, Investigation and Design Manual*, prepared for the British Columbia Mine Dump Committee by Piteau Associates Engineering Ltd., May 1991, as amended from time to time.
2. Dumps must be monitored for physical stability during all phases of closure until the site is closed out.
3. Dumps must be reclaimed to ensure long-term stability and erosion control.
4. Major dumps must be re-contoured in accordance with the approved closure plan.
5. Reclamation of dumps must be undertaken in accordance with standards established in *Guidelines for Metal Leaching and Acid Rock Drainage at Minesites in British Columbia*, W.A. Price and J.C. Errington, Ministry of Energy and Mines, Government of British Columbia, August, 1998, as amended from time to time.

J. Underground Openings

Objective

Prevent long-term inadvertent access to underground mine openings from the surface.

General Standards

1. When a mine is left unattended for any length of time, the owner must take suitable measures to prevent inadvertent access to all mine openings.
2. At final closure, all surface openings to underground workings must be blocked using a suitable method as designed by a professional engineer licensed to practice in the Yukon. This includes capping with an appropriate reinforced concrete structure or filling with material so that the backfilled opening is stable in the long-term.
3. The plan for closing openings must be designed so as to make it as practicable as possible for future access to the mine workings, should the mine be considered for possible mine re-commissioning, at some future date.
4. Drainage of any mine water through a long-term drain must be included where there is a possibility for mine water pressures building to dangerous levels.
5. The closed openings must be monitored for physical stability during all phases of closure until the site is closed out.

K. Stability of Underground Workings

Objective

Prevent the development of hazardous conditions due to subsidence of surface materials into underground workings and to restore the site to an approved final land use.

General Standards

1. All surface and subsurface mine workings must be assessed by a professional engineer licensed to practice in the Yukon to determine stability. Any surface areas disturbed or likely to be disturbed by such workings in the long-term must be stabilized. The assessment must include consideration of the risk and consequence of crown pillar failure.
2. Where underground workings are located, these areas must be monitored for physical stability during all phases of closure until the site is closed out.

L. Acid Mine Drainage Concerns

Objective

Prevent significant impacts to downstream terrestrial and aquatic resources

General Standards

1. Long term active effluent treatment is not considered an acceptable rehabilitation plan.
2. Follow design requirements and conduct the work in accordance with standards established in *Guidelines for Metal Leaching and Acid Rock Drainage at Minesites in British Columbia*, W.A. Price and J.C. Errington, Ministry of Energy and Mines, Government of British Columbia, August, 1998, as amended from time to time.

M. Tailings Impoundment

Objectives

All tailings impoundments and associated components are to be reclaimed to a condition that ensures physical and chemical stability for the long term.

General Standards

1. All impoundment structures must be certified with respect to their long-term stability so as to ensure meeting the approved final land use by a professional engineer licensed to practice in the Yukon.
2. The procedures and requirements set out in the *CDA Dam Safety Guidelines*, published by The Canadian Dam Association, 1999, as amended from time to time, must be utilized in the decommissioning and maintenance of tailings dams and containment structures.

3. Exposed slopes of all major impoundments must be stable in the long term based on criteria established in the guidelines referred to in paragraph 2.
4. All spillways and other water control structures required for the long term must be designed by a professional engineer licensed to practice in the Yukon in accordance with the guidelines referred to in paragraph 2 and installed before closure of the tailings facility.
5. Long-term active effluent treatment does not constitute an acceptable closure plan for a tailings facility. Measures that allow for more rapid cessation of active treatment are encouraged.
6. The closed tailings facility must comply with approved closure plan.
7. Work shall be undertaken in accordance with standards established in *Guidelines for Metal Leaching and Acid Rock Drainage at Minesites in British Columbia*, W.A. Price and J.C. Errington, Ministry of Energy and Mines, Government of British Columbia, August, 1998, as amended from time to time.
8. Tailings impoundments and their related components must be inspected, monitored and maintained to ensure long-term physical and chemical stability, in accordance with the *Guide to the Management of Tailings Facilities*, The Mining Association of Canada, Ottawa, ON, 1998.

N. Water Control Structures

Objective

Stable for the long term.

General Standards

1. Minimal Maintenance requirements.
2. Meet *CDA Dam Safety Guidelines*, published by The Canadian Dam Association, 1999, as amended from time to time.
3. For water quality, meet minimum standard included in the Metal Mine Effluent Regulations at last points of control.