GREEN BAY MING MINE PROJECT

EARLY WORKS WATER MANAGEMENT PLAN

FireFly Metals Canada Ltd.
Route 418, Ming's Bight Road
P.O Box 610 Baie Verte, NL A0K 1B0

December 3, 2025

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1.0 INTRODUCTION

In 2023, FireFly Metals Canada Ltd. (FireFly) wholly acquired the existing and approved Ming Mine, which had been placed in care and maintenance by the previous owners. FireFly has renamed the assets acquired in 2023 to be the Green Bay Copper-Gold Project, which is comprised of the Ming Mine site, Nugget Pond milling facility, Goodyear's Cove concentrate storage and port, Little Deer / Whalesback property, and the adjacent landholdings acquired from Gold Hunter Resource Inc.

FireFly is planning an expansion of the existing approved underground mine, which is called the Green Bay Ming Mine Project (the Project). The Project is located on the Baie Verte peninsula in the province of Newfoundland and Labrador (NL), Canada. A description of the overall Project is provided in Section 1.1. In April 2025, FireFly submitted a Registration for the Project with the Environmental Assessment (EA) Division of the NL Department of Environment, Conservation and Climate Change (NLDECCC). Following regulatory and public review of the Registration, the Project was released from further assessment, with a number of conditions of release. One condition was that a Water Resources Management Plan be submitted to the Water Resources Management Division (WRMD) for approval prior to Project construction.

Before construction begins, several preparatory activities are necessary for strategic site preparation, positioning FireFly to transition smoothly into full-scale construction and mining operations. This early works stage is typical for large resource development projects, with regulators recognizing the ability for interim management plans to mitigate potential environmental effects associated with these activities. The early works phase, described in Section 1.2, includes timber harvesting, road and utility corridor construction, temporary and permanent accommodations, and site preparation for critical infrastructure.

The following document is an Early Works Water Management Plan (EWWMP) in support of the planned early works phase of the Project, which will be subject to review and approval by applicable regulators. This document has been developed to manage and mitigate water-related risks, mainly erosion and sedimentation risks, during early work activities described in Table 1.1. The EWWMP outlines how water will be managed on-site to prevent and/or mitigate environmental effects and comply with legislation and Project approvals. A water management plan will also be developed for the construction and operation of the Project.

1.1 Construction and Operation Overview

The Project comprises an underground mine works expansion from an annual production rate from 1,350 tonnes per day (tpd) to 4,800 tpd. The Project also includes a new process plant and tailings management facility (TMF) to be constructed adjacent to the mine, thereby improving the Project economics, and reducing environmental effects and promoting sustainability. The main components are shown in Figure 1.1 and include:

- associated underground mining infrastructure
- process plant and TMF
- surface infrastructure, including haul roads, power transmission lines, and water intake pipelines
- copper concentrate storage and handling
- accommodation and camp facilities

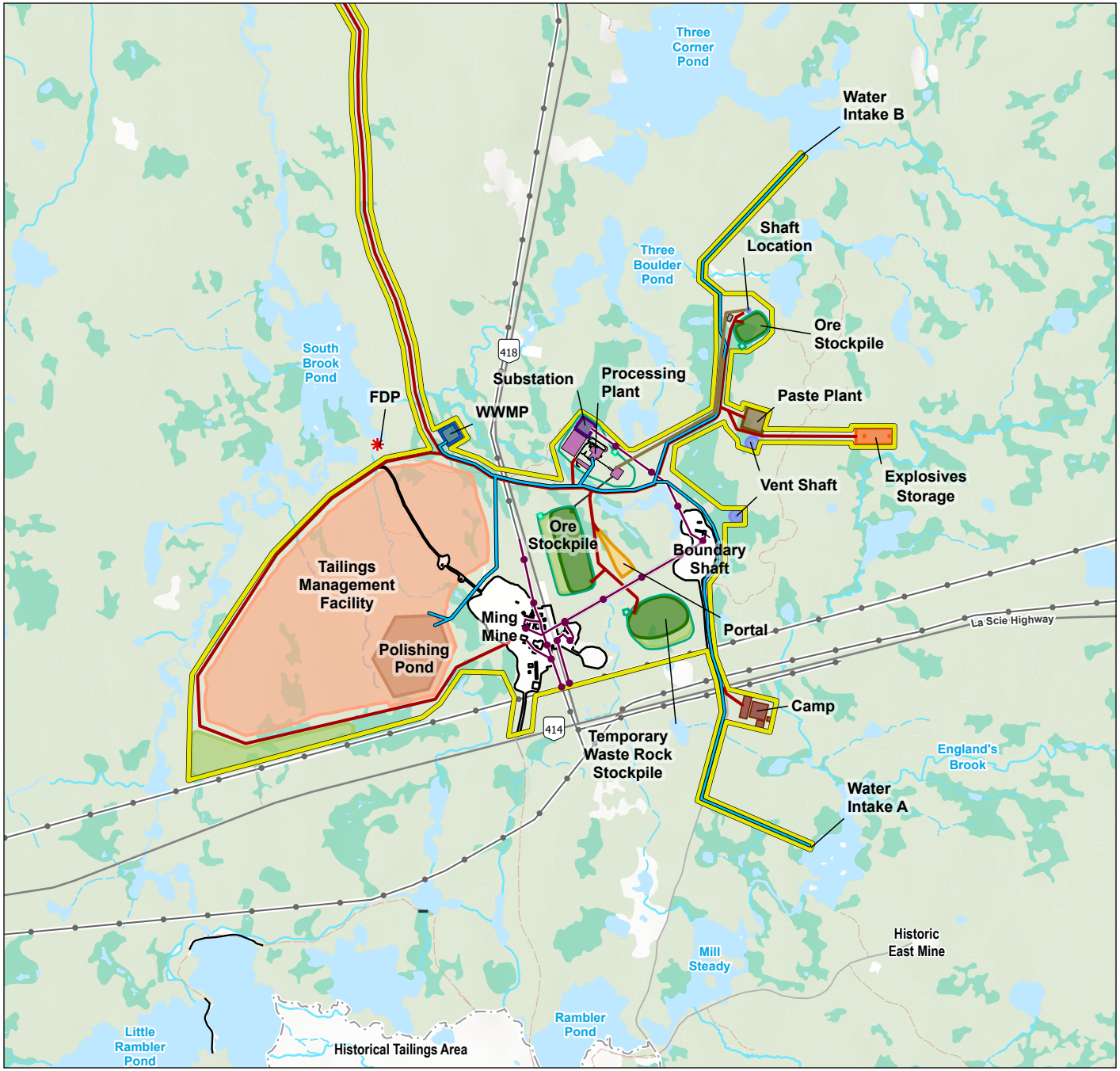


Figure No.
1.1
Title
Planned Infrastructure at the Ming Mine Site

Client/Project
FireFly Metals Ltd
Green Bay Ming Mine Project

121418199_1_001b

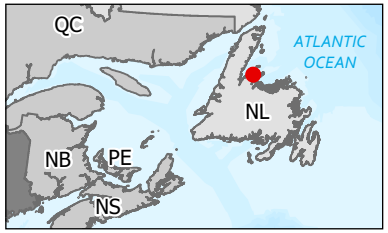
Project Location
Baie Verte, NL

Prepared by MB on 2025-02-04
Revised 2025-03-19

N

0 400 800 Metres
(At original document size of 8.5x11)
1:28,000

- Conveyor
- Drainage Channel
- Pipeline
- Powerline
- Road
- Project Area
- Camp
- Catch Basin
- Explosives Storage
- Ming Mine Operation
- Processing Plant Infrastructure
- Substation
- Stockpile
- Organic Laydown
- Paste Plant
- Portal Location
- Shaft Location
- Polishing Pond
- Tailings Management Facility (TMF)
- Wastewater Management Plant (WWMP)
- Other Features
- Final Discharge Point (FDP)
- Dam
- Highway
- Arterial / Collector
- Resource Road / Trail
- Powerline
- Indeterminate Stream
- Intermittent Watercourse
- Definite Watercourse
- Waterbody
- Wetland
- Forested Area



Notes
1. Coordinate System: NAD 1983 CSRS UTM Zone 21N
2. Data Sources: FireFly Metals Ltd, Stantec
3. Background: NRCan CanVec, GovNL, OpenStreetMap

Stantec

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Construction activities for the new mill, TMF, and other infrastructure are designed to use existing disturbed areas wherever feasible, reducing additional site clearing. However, some clearing is necessary for the TMF and a new port access road. Standard commercial equipment, including excavators, dump trucks, and cranes, will be used for construction. The process plant will be located east of the current mine site, where ore will be processed to produce copper-gold concentrate, and tailings will be managed in an onsite TMF. The TMF will feature a rockfill dam lined with high-density polyethylene geomembrane to manage the potentially acid-generating properties of the tailings. Most water collected will be recirculated for reuse in the processing plant.

The operation phase of mine life includes further development of the existing underground mine, extraction of the ore body and the production of copper and gold concentrates. The operating LoM is estimated to be approximately 15 years. The mining operation will consist of a mechanised underground mine which is planned to deliver 4,800 tpd to a centralised ROM pad. The main activities during operation will include:

- underground mining
- maintenance of mine equipment
- crushing and processing of ore
- Project-related traffic including transport of concentrate to Pine Cove
- maintaining site security and managing site access

FireFly has a port access agreement with a nearby operator at Pine Cove. A port access road will be developed by FireFly to connect to the third-party property. FireFly will haul concentrate to the third-party port, at which point the third-party will load the concentrate onto ships for transport to refineries. FireFly would not have care and control of the third-party port facility but can conduct audits of the facility to verify proper handling of the concentrate. The concentrate would be loaded onto ships and transported for refining. The Nugget Pond milling facility and Goodyear's Cove concentrate storage and port, which are currently in care and maintenance, are not planned to be used as part of the Project and therefore no Project activities are planned in these locations.

1.2 Early Works Overview

Before construction begins, several preparatory activities are necessary for strategic site preparation, positioning FireFly to transition smoothly into full-scale construction and mining operations. These site preparation activities, summarized in Table 1.1, are considered "early works" and crucial for adequately preparing the site for construction. The early works workforce is projected to peak at 175 personnel by mid-2026, increasing to an ultimate 750 personnel by 2028.

The approximate footprint of the areas to be developed (cleared) to accommodate the expansion of the mine and related infrastructure are shown in Figure 1.1.

While FireFly is committed to reducing areas of new ground disturbance, the Project is also still in the early stages of design and there are several constructability factors (e.g., geotechnical, environmental, and logistical considerations) that could cause the footprints to shift or expand as further design studies are completed (e.g., there could be a requirement for additional temporary laydown areas to support construction activities). For this reason, FireFly has assumed a 15% buffer on the area to be cleared (i.e., the total area of new ground disturbance / clearing could be approximately 2 km^2).

Table 1.1 Summary of Key Timber Harvest and Early Works Phase Activities

Activity	Description
Timber Harvest / Clearing	• Clearing involves the removal and disposal of vegetation, including trees, brush, shrubs, and other foliage. • Trees will be cut down, transported, and stacked in the cleared area. • Merchantable timber from these sites will be salvaged and sold, provided market conditions allow. • Unsellable cuttings may be disposed of through chipping and piling, and alternative beneficial uses for slash and non-marketable timber will also be explored. • The clearing is necessary to facilitate the development of the process plant, TMF, site and port access roads, explosives storage facilities, and the new transmission line corridor.
Early Works Phase	
Grubbing	• Grubbing involves the removal of roots, stumps, embedded logs, and debris. • Stumps may be removed using machinery or heavy equipment. • Whenever possible, the materials removed during grubbing will be stockpiled with the overburden and later used as biomass to restore disturbed areas after construction. • No grubbing is anticipated within the area along the transmission corridor.
Stripping	• Stripping involves removing topsoil and other organic materials. • Whenever possible, the stripped topsoil will be stockpiled in the same area as the overburden. • This topsoil will be used after construction during the mine's operation for progressive reclamation and closure, aimed at restoring disturbed areas. • No stripping is anticipated for roads or the transmission line corridor.
Grading	• Grading involves the removal and relocation of overburden, which will be carried out using a bulldozer, excavator, or scraper. • The graded material will be temporarily stored in one of the previously cleared areas. • If the excavated materials are suitable for reuse, they will be placed in areas that require fill, such as during the construction of roads and the process plant site. • If the materials are not suitable for reuse due to issues like permeability or high moisture content, they may be placed in an overburden stockpile for reclamation purposes.
Drilling and Blasting	• Drilling and blasting will also be required for site prep (process plant road and dam construction). • Blast holes will be drilled using conventional drills. • Explosives will range from pre-packaged design to ANFO and/or Emulsion based products for large blasts.
Underground Development	• During the first year of underground development, waste rock will be excavated in preparation for the commencement of mining operations. • The geological model and geochemical characterization studies of the different rock types will have determined which zones in the mine are PAG. • The PAG material will be segregated so that its drainage will be contained and managed as required. • Non-PAG material will be used for dam and road construction, and/or pads and other infrastructure-related development. • A crusher will be used to reduce mine rock to aggregate of various sizes for use in construction.
Development of the Site Road Network	• A new road network around the process plant, portal, vent raise and waste rock stockpiles will be developed east of Highway 418 to link site facilities. • Generally, the roads will be for slow traffic (max 30 km/hr) on site and gravel roads will be constructed from imported fill material as base, with a fine crushed top cover compacted to design specifications. • Roads will be constructed to various dimensions and standards depending on the purpose of the road.

Table 1.1 Summary of Key Timber Harvest and Early Works Phase Activities

Activity	Description
Development of the Electrical Power Transmission Corridor	• The current power supply to site is 25 kV, additional power supply is required to support the Project. • A new connection from the existing 25 kV will be constructed, requiring clearing of a transmission corridor to the new proposed substation. • In addition to using the current power supply for site, generators will be required to supplement power during this phase.
Preparation of Construction Surfaces	• Where possible reclaimed graded material will be used, but it is limited. • Imported fill material will be needed for infrastructure pads and roads. • A borrow pit is proposed within the footprint of the TMF. • The geochemical characterization of this material is ongoing, but if determined to be non-PAG, non-metal leaching (ML), inert and construction grade, it will be used to construct the TMF. • If the material is found to be PAG/ML, it will be backfilled or can be used to construct the interior sections of the TMF and polishing pond as they will be submerged and covered by tailings and water. • Other rock that might be excavated, such as material around the Portal is also being characterized and pending the results maybe used for construction. • In addition to mine rock on site, material from the nearby Argyle/Pine Cove rock stockpiles and the Shoreline granite aggregate have been classified as inert construction grade that is non-PAG/ML fill material. • All large fills will be done with well drained granular materials, placed and compacted in layers/lifts where stability is critical mainly for the TMF embankment. • Temporary construction support facilities, such as construction offices and laydown areas, will be constructed onsite to service machinery used during the site preparation and construction phase and storage area for construction material.
Power Supply	• It is estimated that 10 MW of power will be required during the early works-site preparation phase. • Electrical power needed during initial site preparation will be provided by the existing transmission 25 kV line and corridor. • The site has an emergency power supply with 1.5 MW diesel generator • During this phase additional supplemented power may be required with two additional 0.5 MW diesel generator(s), specially to support the accommodation complex, laydown areas and other auxiliary work area/activities. • Clearing and site prep for the installation of a substation.
Maintenance Shop	• Existing workshops and maintenance areas will be used primarily by underground operations. • Site prep and construction contractors will use temporary laydown areas within the Project footprint.
Offices, Security and Communication	• Existing offices, security and communication infrastructure will be used. • The temporary site prep/construction area established for contractors will have modular offices, communication and temporary security established.
Development of the Waste Rock and Ore Stockpiles	• The basic infrastructure of the waste rock stockpiles, and ore stockpiles will be developed during the site preparation phase so that the area is ready to begin accepting material at the onset of operations. • Most of the non-PAG/ML waste rock generated through pre-stripping or underground development will be used to construct roads, laydown areas and pads for infrastructure. • PAG/ML rock identified through the geological modelling and geochemical characterization studies will be temporarily stockpiled in an area so that runoff from this material will be contained and managed, as required. • As part of the waste rock management program, confirmatory testing will be done as required.

Table 1.1 Summary of Key Timber Harvest and Early Works Phase Activities

Activity	Description
Water Management System	• Water management onsite will be expanded during the site preparation phase so that runoff from disturbed areas can be appropriately managed. • The existing water treatment plant will be used during this phase until the new water management plant is constructed.
Development of the TMF	• The basic infrastructure of the TMF will be developed during the site preparation phase so that the area is ready for dam construction at the next phase of development.
Waste Management	• Most solid non-hazardous waste generated during site preparation will be recyclable. • Scrap metal, wood, paper and cardboard, where not reusable, will be segregated and trucked offsite to appropriate facilities. • These wastes generated during site preparation will be collected in temporary collection areas (areas that have been disturbed by clearing) and subsequently trucked off site to a licensed disposal site. • Hazardous waste will be collected, stored on site temporarily as appropriate and trucked offsite to appropriate licensed facilities. • Grey water and sewage from temporary bathroom facilities will be collected in above ground storage containers. • These biological wastes will be transported by a provincially licensed company to an approved facility.
Accommodation Complex	• A temporary 44 room trailer to house workers will be installed, with a mobile water treatment plant and membrane bioreactor and septic fields to supplement the existing sewage and water treatment. The housing is necessary to support the early works phase prior to the construction of the new accommodation complex. • A new accommodation complex to house 250 workforce, may commence at the end of early works to prepare for the construction phase. At this location potable water plant and a domestic sewage system for the accommodation complex considers the treatment of sewage with on-site membrane bioreactor and leach field and/or will be collected for off-site disposal at an existing, approved sewage disposal facility. The sewage treatment and leach fields will be designed and monitored to comply with provincial standards.

2.0 WATER MANAGEMENT MEASURES

Work will be conducted with the least amount of disturbance necessary. Works within 15 m of waterbodies or watercourses will strictly follow the requirements outlined in the acquired watercourse alteration approvals from the NLDECCC and Fisheries and Oceans Canada (DFO). Work will be conducted in a manner that controls potential sedimentation of watercourses and waterbodies in or adjacent to the work areas as outlined in the following procedures:

- Measures will be implemented to reduce and control runoff of sediment-laden water during grubbing, and the re-spreading and stockpiling of grubbed materials. Where grubbed materials are re-spread or stockpiled, as many stumps and roots as possible will be left on the ground surface to maintain soil cohesion, dissipate the energy of runoff and promote natural revegetation.
- The length of time that inactive grubbed areas will be left exposed to the natural elements will be minimized to prevent unnecessary erosion. Mitigations such as the placement and maintenance of silt fencing will be used to prevent erosion from exposed areas.
- Excavation, embankment and grading within 15 m of a stream crossing will be done in such a manner that erosion and sedimentation of watercourses and waterbodies is managed and strictly follows the requirements outlined in the acquired watercourse alteration approvals from the NLDECCC and DFO.
- Work relating to the construction and operations activities for the Project will be conducted according to the conditions set out in the permits and/or approvals and authorizations from the NLDECCC.
- Primary means for controlling erosion is avoiding activity that contributes to erosion. The disturbance of new areas will be reduced to the extent practicable.
- Drainage ditches will be stabilized if required (e.g., lining with vegetation or rock, terracing, interceptor swales, installation of rock check dams) to reduce soil erosion. Any such measures will be properly maintained following installation.
- Areas of exposed erodible soil will be stabilized by back-blading, grading and/or compacting to meet engineered slope requirements.
- If an environmental inspection reveals that silt is entering any waterbody, further mitigative measures will be implemented, such as temporary drainage ditches, siltation control (settling) ponds, ditch blocks/check dams or sediment dam traps, to intercept run-off. The necessary or appropriate measures will be determined in the field.
- Work and laydown and storage areas will be monitored for erosion and appropriate repair action taken as necessary.
- Existing or new siltation control structures used in this work will be monitored by the contractor for excessive accumulation of sediment. The contractor will remove accumulated sediment from control structures to gain full effectiveness of the systems. Effluent from control structures will be released to flow overland for appropriate filtration prior to entering any waterbody.
- The contractor will be required to remove excess water from siltation control systems prior to excavation of sediment. Trucks will be equipped with liners to prevent loss of wet sediment during transport.

3.0 EROSION AND SEDIMENT CONTROL MECHANISMS

The below erosion and sediment control (ESC) controls describe possible mechanisms for reducing erosion and sedimentation which can be implemented to support early work activities and managing water-related risks.

3.1 Protection of Stockpiles

Stockpiled material, especially topsoil and overburden with higher content of low cohesion fines, is vulnerable to soil erosion. Several techniques may be used to minimize this problem. Tarps, plastic sheets, erosion control blankets, hydroseeding, and tackifiers may be used to cover exposed soils temporarily. Each of these tools is effective in preventing erosion of exposed soils when maintained properly. Limiting the amount of slope run of the stockpiles can also reduce rilling of the stockpiles.

In the event that stockpiled material is left for extended periods, such as topsoil removed from construction stripping and foundation excavation, it may be advisable to use hydroseed or flexible growth medium (FGM). Tarps or plastic sheets secured with sandbags may also be recommended however they typically require more maintenance.

Stockpile construction should consider the following to prevent slope rilling and gullying (GGHCA 2006):

- Coarser material to be used in stockpiles lowest bench and slope outer boundary (Figure 3.1).
- Consider flattening the slope of the first stockpile bench slope (Figure 3.2).
- The first bench slope run length should be shortened to the extent practicable.
- Slope surface should be tracked to roughen surface, avoiding track connectivity.
- Where possible, first bench and slope should be vegetated to stabilize the slope (see Section 3.2).
- Consider progressive rehabilitation of each successive slope and bench as it is stockpiled (see Section 3.2).
- In the event of erosion from the first stockpile bench slope, install a rock berm at the downstream toe of the first slope bench with upstream filter cloth (see Section 3.3).
- Consider use of a heavy-duty silt fence around the stockpile toe where erosion is occurring. In cases of heavy erosion and accumulation of materials against the silt fence, consider fence doubling (see section 3.4).
- Installation of rock berms between the ditch and stockpile to act as sediment containment and prevent potential stockpile slope sloughing from reaching the adjacent ditch (see section 3.5)

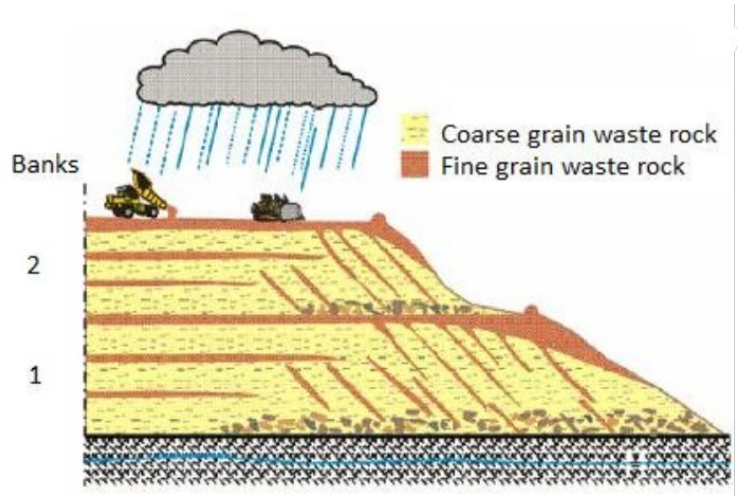

Figure 3.1 Stockpile Design Example (Dubuc et al., 2017)

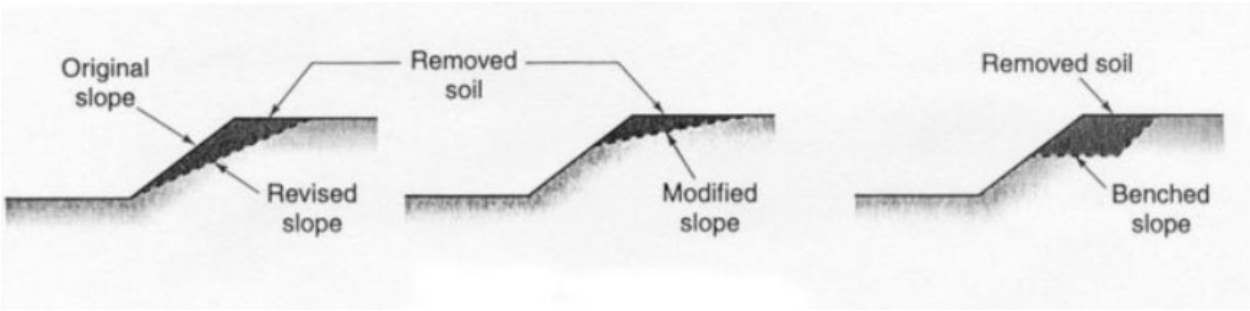

Figure 3.2 Flattened vs Benched Slopes (Zoghi 2008)

3.2 Vegetation

Re-establishing vegetation is a very effective method used to preventing erosion because surface flow velocity can be reduced, and root structures hold erodible soil in place. Selecting vegetation that is native to the site area and has rooting characteristics complementary to erosion resistance would be most effective to provide long-term stability.

Hydraulic seeding (hydroseeding) is more effective than broadcast seeding for restoration of disturbed soils, and is quite effective on difficult slopes (greater than 3:1). Hydroseeding involves spraying a mixture of water, grass seed, and mulch onto the soil, while broadcast seeding is a manual method of scattering dry seeds over a relatively large area. Use of fertilizer is discouraged unless it can be confirmed that non-phosphorus fertilizers could be applied to limit impact on water quality in receiving watercourses. The addition of topsoil is required for waste rock piles as a growth medium. Straw mulch should be applied to a depth of 25 mm to 50 mm and crimped or indented into the ground 35 mm to 60 mm (GGHCA 2006). The thickness of the mulch may need to be increased in disturbed areas or near watercourses. Hydroseeding and restoration of disturbed ground is most effective when completed prior to September 15. Hydroseeding completed after this date will require additional stabilization by means of bonded or reinforced fiber matrix. Seeding mixes must be native species and meet regulatory requirements.

Figure 3.3 Hydroseeding Example (GGHCA 2006)

3.3 Diversion Berms

Preventing clean water from travelling over exposed work areas significantly reduces the volume of construction contact water that requires treatment. Wherever possible, diversion berms should be utilized to redirect non-contact runoff water around the work area.

The diversion berm is a channel constructed across a slope with a supporting earthen ridge on the down gradient side. The purpose of the diversion berm is to reduce the slope length and to intercept and divert storm water runoff to stabilized outlets at non-erosive velocities. Diversion berms will assist in managing surface water flows and preventing soil erosion. On moderately sloped areas, they may be placed at intervals to trap and divert sheet flow before it has a chance to concentrate and cause rill and gully erosion. They should be placed at the top of slopes to re-direct runoff from upland drainage areas off the slope. Slopes along diversion berms should be between 1% and 2%. Diversion berms should be inspected on a regular basis and repaired where they have been breached or create standing water. Damages caused by construction traffic or other activity should be repaired before the end of each workday. A typical design for a diversion berm is included in Figure 3.4.

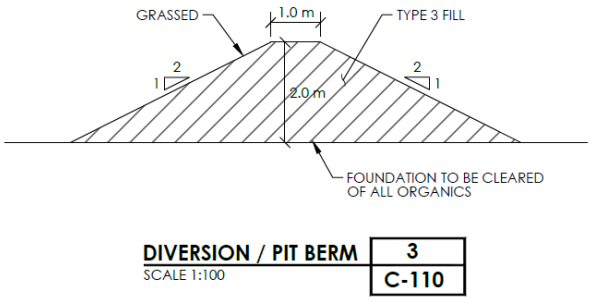

Figure 3.4 Diversion Berm Typical

3.4 Sediment Fencing/Barriers

A sediment fence/barrier should be installed down gradient of disturbed areas where erosion would occur in the form of sheet or rill erosion. Their function is to trap, filter, and treat sediment-laden runoff while reducing hydraulic energy. The sediment fence should be installed following the slope contours and must have uphill returns at either end to prevent sediment from flowing around it.

Sediment fencing/barriers should be selected based on the severity of the slope, anticipated velocity of water, ground surface type, and anticipated sedimentation of runoff. The sediment fence should be stored, handled, and installed in accordance with the manufacturer's instructions. Sediment fences should be inspected immediately after each rainfall and at least daily during prolonged rainfall. Any required repairs shall be made immediately. Sediment deposits shall be removed regularly. Sediment fences/barriers are not to be installed in drainage channels or anywhere flow is concentrated.

The maximum allowable slope lengths and grades for silt fences/barriers are (GGHCA 2006):

Grade	Length
2:1	15 meters
3:1	25 meters
4:1	40 meters

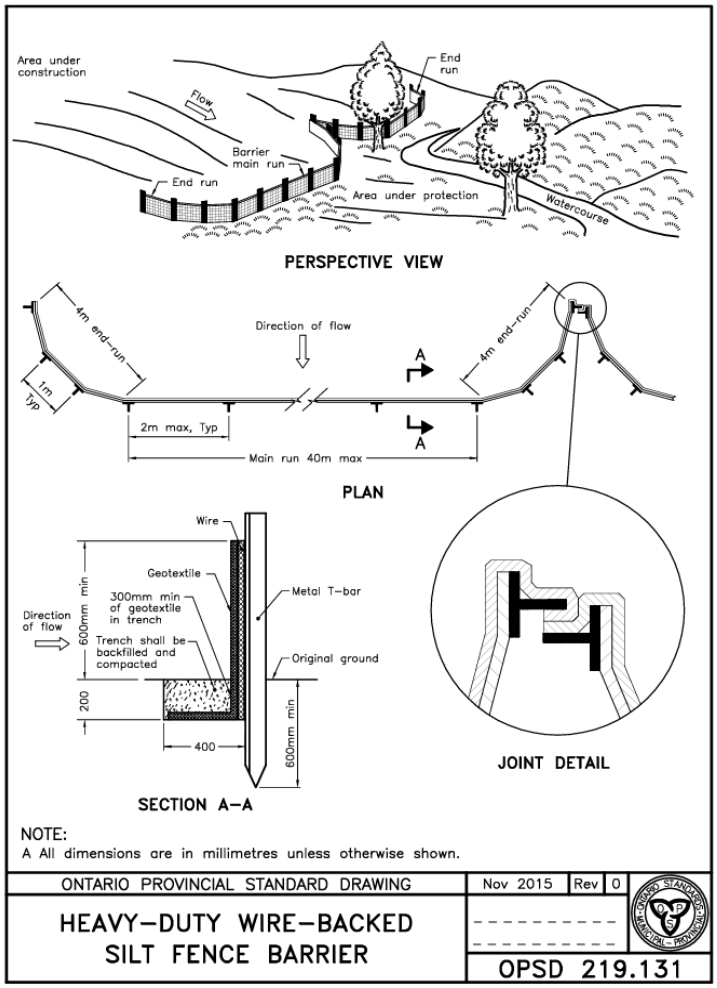

Figure 3.5 Sediment Fencing Typical (OPSD 219.131)

Vegetative buffer strips are engineered stormwater conveyance systems which treat small drainage areas, consisting of a level spreader and planted vegetation should be provided down gradient of sediment fencing. The ideal slope for a vegetated filter strip is between 1%-5% (MOE 2003). A vegetated buffer strip of 15 m should be maintained around watercourses and water bodies in urban or other developed areas. A buffer of 30 m should be maintained around land disturbance (i.e., timber cutting, silviculture, roads, skid trails, landings, clearing of vegetation, etc.), piling or grubbing.

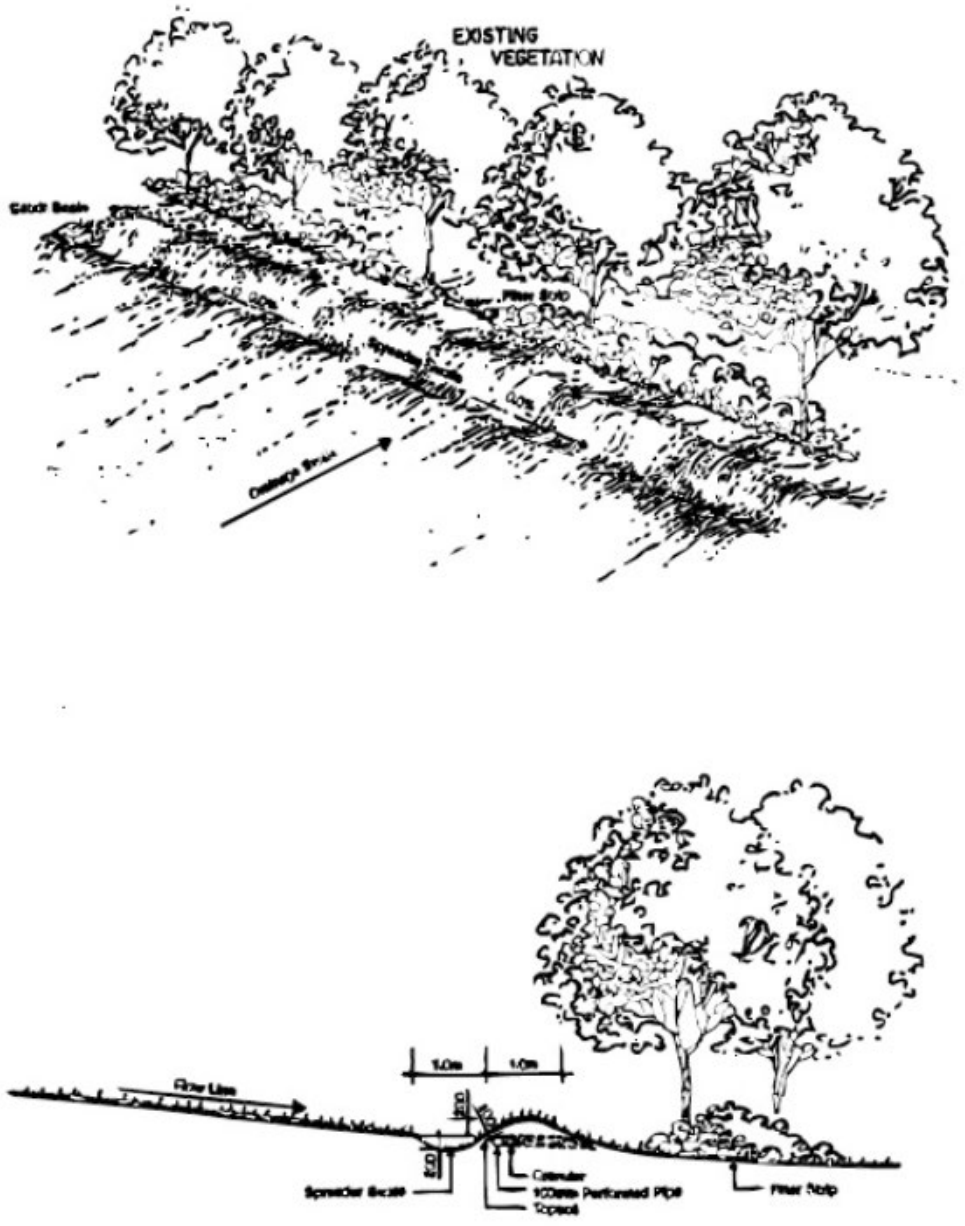

Figure 3.6 Vegetated Buffer Strip Typical (MOE 2003)

3.5 Stockpile Perimeter Rock Berm

Installation of rock berms between a stockpile perimeter ditch and stockpile acts as sediment containment and prevents potential stockpile slope sloughing from reaching the adjacent ditch. Topsoil and overburden stockpiles should have priority for installation of stockpile perimeter rock berms.

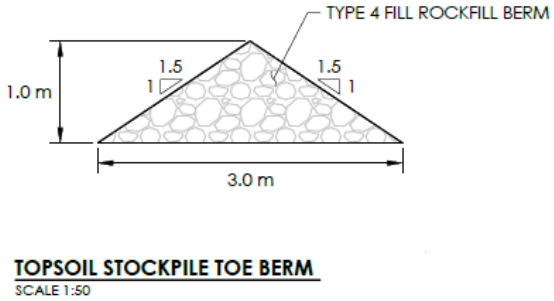

Figure 3.7 Stockpile Perimeter Toe Berm

3.6 Dust Suppression

Dust accumulation throughout the mine site can increase TSS in runoff during precipitation events. Dust suppression for haul roads can be addressed with dust control surface watering. When watering of haul road surfaces is insufficient to address dust creation, other dust control and granular surface stabilization additives may be used. Regulatory compliance for dust control methods should be confirmed prior to use.

3.7 Conveyance Controls

Three typical conveyance ditches are proposed depending on the slope and elevation of the groundwater table to reduce erosion potential as summarized herein. Ditches will be lined with rip-rap for erosion protection where > 6% ditch slope; ditches with flatter slopes will be seeded. In areas where ditch gradients are steeper than 8%, sediment traps (i.e., check dams) will be installed at a spacing of 200 m/Ditch Grade % to provide energy dissipation and reduce erosional flow velocities in the ditch. For the same purpose, energy dissipation pools will be installed at the change in ditch gradient from slopes of 10% or higher to shallower slopes.

Ditch design was grouped into three ditch categories depending on slope and the elevation of the groundwater table, as detailed below and shown on Figure 3.8.

- **Ditch Category 1** - 1.0 m base width, 2H:1V side slope, berm height = 0.5 m
  Applicability: Ditch segments where a 1 m excavation below natural ground is not expected to intercept groundwater and ditch slopes exceed 1%
- **Ditch Category 2** – 1.0 m base width, 2H:1V side slope, berm height = 1.5 m
  Applicability: Ditch segments with perceived shallow groundwater table and ditch slopes exceed 1%
- **Ditch Category 3** – 3.0 m base width, 3H:1V side slope, berm height – 1.5-2.4 m
  Applicability: Ditch segments with perceived shallow groundwater table and ditch slopes of 1% or less

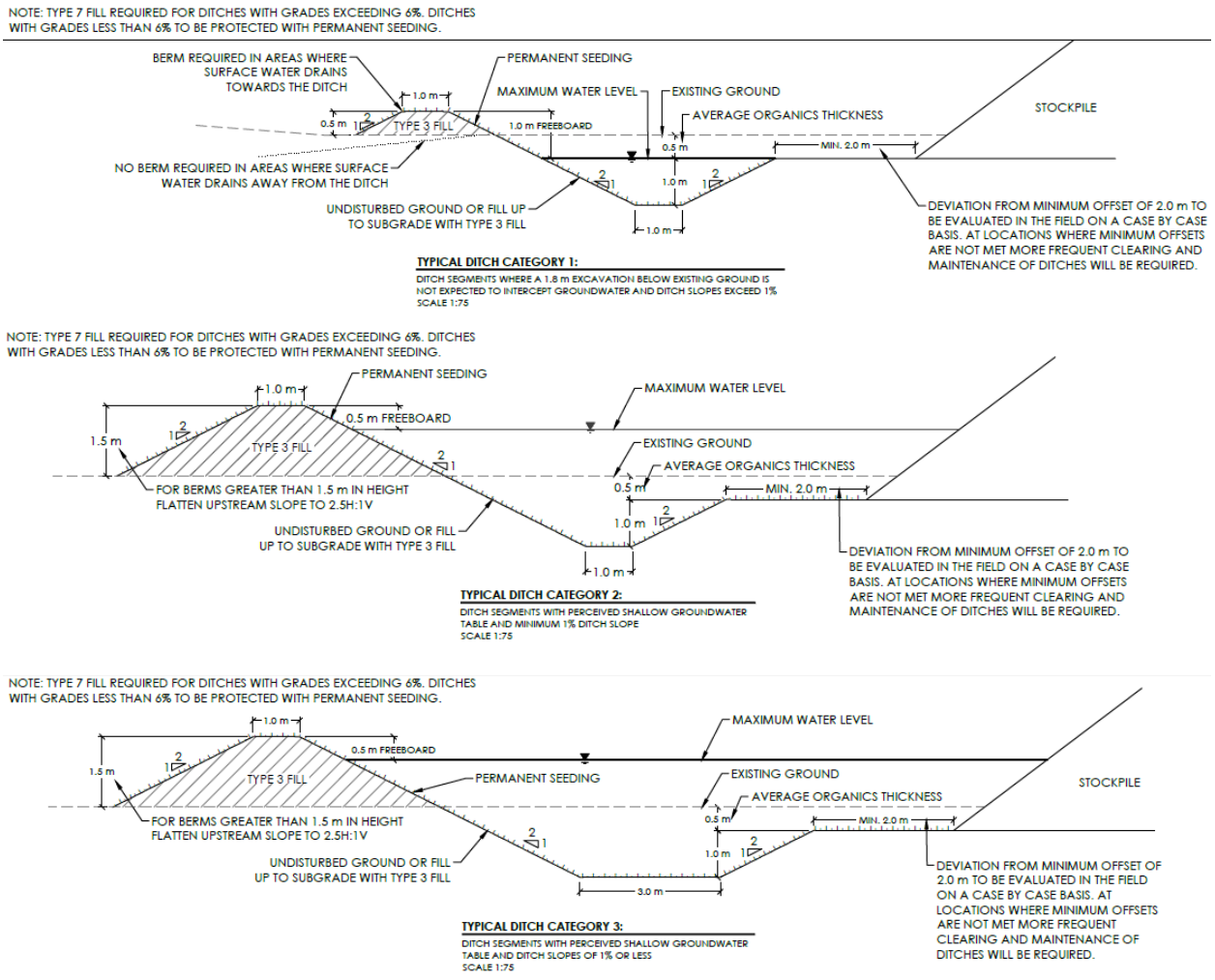

Figure 3.8 Ditch Category Typicals

3.7.1 Reducing Slopes

Maintaining short slopes and shallow gradients for conveyance ditching will keep flow through velocities low. Increased velocities may mobilize or suspend sediment particles throughout the conveyance towards the end-of-pipe ponds. Where slopes are unable to be reduced, the addition of rock-lining or check dams may be introduced to reduce velocities.

3.7.2 Rock-Lined Channels

Rock-lined channels should be constructed at locations where surface water drainage is expected to concentrate either due to the existing topography or where diversion berms are constructed to direct flow. They are designed to handle larger volumes of water flowing at relatively higher velocities. The armour stone and underlying non-woven geotextile are to prevent erosion and allow water to be transported down slope or across disturbed terrain to a safe discharge point. Due to the level of effort, cost, and aesthetics of rock-lined channels they are typically preferred for longer term erosion prevention applications.

Discharge points must be on level ground through a dissipation pool or into heavily vegetated areas not susceptible to erosion.

If preferred, a permanent turf reinforcement mat, such as North American Green's SC250 or approved equivalent, can be used to line channels instead of rock and a non-woven geotextile. North American Green's SC250 is comprised of a permanent, high strength three-dimensional matting structure incorporated with a straw/coconut fiber matrix. It is designed to provide both extended term and pre-vegetated erosion protection and permanent turf reinforcement in a wide variety of applications, including high flow channels. The manufacturer's recommendations for installation are to be followed.

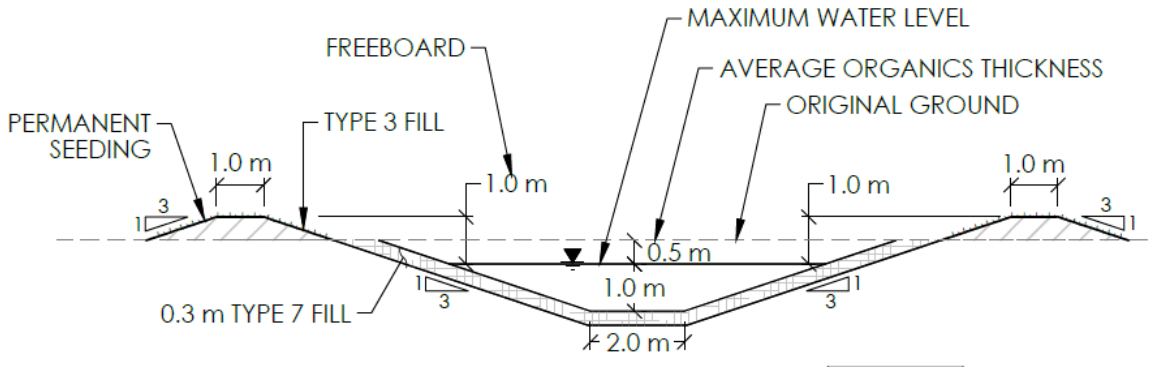

Figure 3.9 Rock Lined Channel Typical

3.7.3 Check Dams

Check dams are intermediate structures that slow the velocity of concentrated runoff and trap sediment that enters ditches during heavy rainfall events. The type of material for check dams can vary depending on the type of channel and anticipated water velocity. Check dams can include:

- Sediment check dams: should be installed in all rock-lined channels where the gradient exceeds 8% and be spaced no more than 25 m apart. The details required to construct a check dam within rock-lined channels is presented in Figure 3.10. The required non-woven geotextile embedded in the upstream side of the berm is independent of the geotextile required for the rock-lined swale.
- Straw bale check dam: Haybales should be installed within a 0.075 m trench within the ditch using stakes driven at least 0.6 m into the ground surface. The haybale check dam should be at least 1.275 m wide, as presented in Figure 3.10.
- SiltSoxx check dam: SiltSoxx check dams can have a lower lifetime cost compared to sediment check dams, and come in pre-built diameters from 0.2 m to 0.8 m with varying materials depending on durability requirements. The required spacing of SiltSoxx as check dams depends on ditch slope and size of SiltSoxx used and is provided in Manufacturer instructions. A typical is presented as Figure 3.11 from Filtrexx ®.

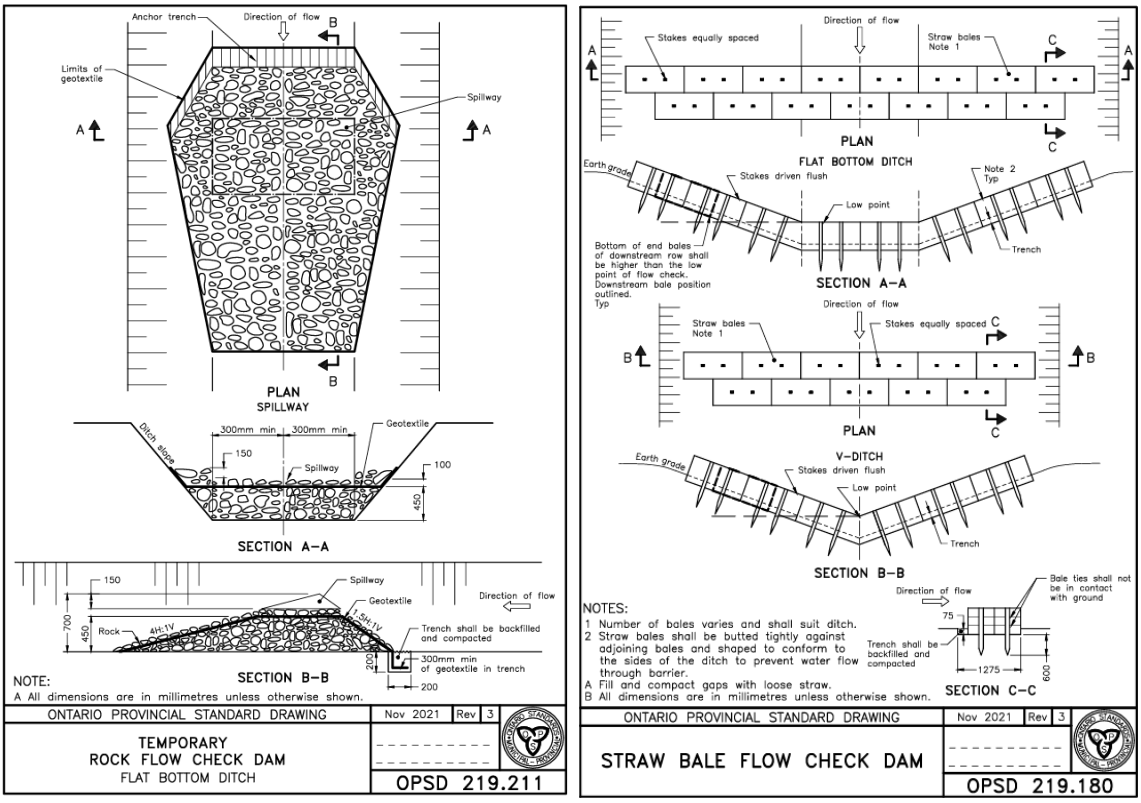

Figure 3.10 Check Dam Typicals

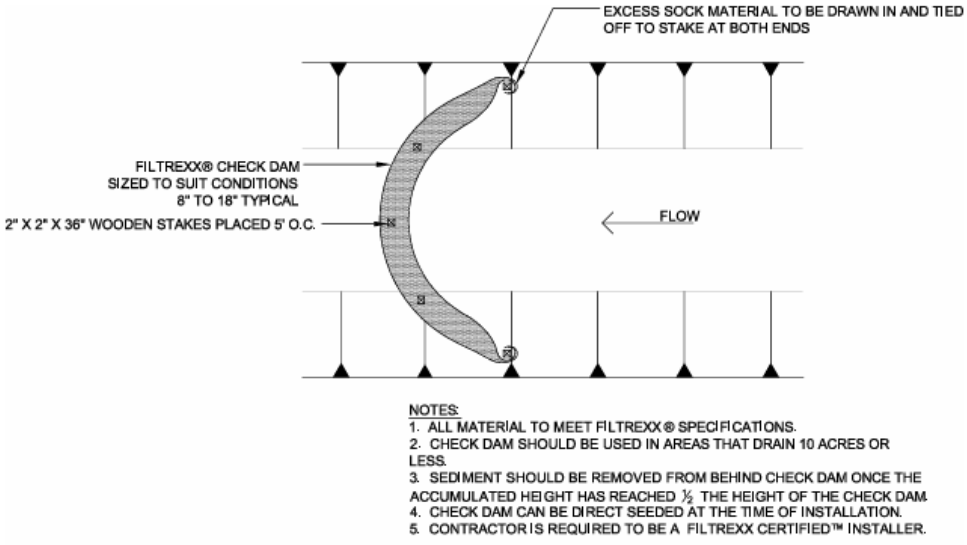

Figure 3.11 Filtrexx SiltSoxx ® Typical

3.7.4 Sediment Traps

Sediment traps are sediment check dams that incorporated an excavated basin upstream of the check dam for sedimentation. The excavated basin should be approximately 1.0 m upstream of the check dam and extend a maximum of 20 m upstream. The width of the excavated basin should be half of the excavated length. The excavated basin depth should be 1.0 m with 0.5H:1V side slopes and should have sedimentation removed from the basin periodically to maintain performance. A typical for sediment traps within a ditch is included in Figure 3.12.

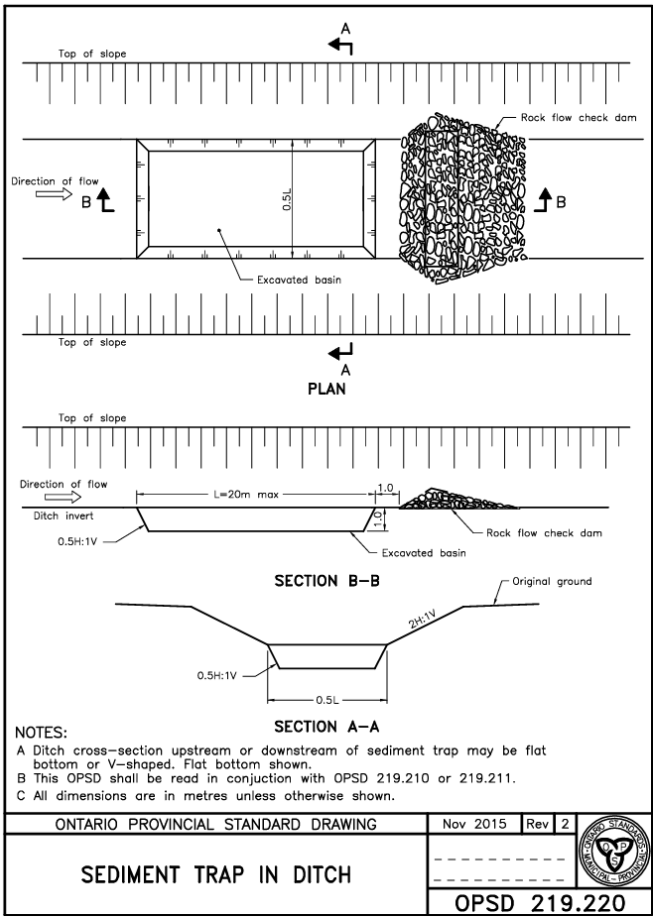

Figure 3.12 Sediment Trap Typical

3.7.5 Ditching Cleanout

Sediment build-up in ditches should be removed regularly to reduce the risk of settled particles re-suspending during large precipitation events and being carried into the sedimentation or dewatering ponds.

4.0 REVISION CONTROL

The EWWMP will be revised as necessary to reflect site-specific environmental requirements and allow updates as work progresses. EWWMP holders may initiate revisions by forwarding proposed revisions to the Site Manager and/or the HSE Department. The following information will be provided on the Revision Request Form (see Appendix A) for revision requests:

- Section to be revised
- Nature of the revision
- Rationale for the revision (e.g., environment, worker safety)
- Name of person who submitted the revision request

Approval for revisions will be sought from FireFly. When the HSE Department receives approval for the revision request, details of the revision will be distributed to EWWMP holders and will be documented in the Revision History Log (Appendix B). Each revision will be accompanied by:

- Revision instructions
- List of sections being superseded
- An updated Table of Contents indicating the status of each section in the EWWMP. When EWWMP Holders receive a revision, they will, within two working days:
  - Read the text of the revision
  - Check the control sheet to confirm that all the listed pages have been received
  - Remove and destroy the superseded pages from their copy of the EWWMP
  - Insert the revised pages in the proper place in their copy of the EWWMP
  - Page check the EWWMP, using the updated table of contents to confirm the EWWMP is complete and current
  - Enter the revision number and date entered on the Revision History Log
  - Incorporate the revision into the area of responsibility, as appropriate
  - Confirm that their personnel are familiar with the revisions

5.0 ROLES AND RESPONSIBILITIES

This section outlines the roles and responsibilities of parties involved with on-going and new activities on the Properties.

FireFly will:

- Provide final approval for the EWWMP and any subsequent revisions
- Monitor and inspect the work being carried out
- Liaise with relevant government agencies and community interest groups as required

The designated Health, Safety, and Environment (HSE) Department will:

- Distribute the EWWMP
- Review revision requests
- Conduct a review of the EWWMP on an as-needed basis
- Distribute revisions to controlled distribution representatives
- Maintain document control

The designated site Superintendent/Manager will:

- Act as FireFlys' representative on-site, responsible for environmental protection and will report issues or developments related to the environment to the HSE Department
- Hold an environmental orientation session for contractors and their personnel, and other personnel to be involved in the Project activities on an as-needed basis
- Confirm FireFly workers and contractors/sub-contractors and their staff onsite are familiar with the EWWMP and its procedures and maintain a master file of all EWWMP orientation efforts and signature sheets
- Implement the EWWMP on site and confirm that workers are aware of the EWWMP and their responsibilities under the plan
- Confirm FireFly workers and contractors/sub-contractors in the field review revisions
- Communicate with the HSE Department about proposed work activities so that applicable approvals, authorizations and permits can be obtained
- Monitor or designate a representative to monitor construction and operation activities for compliance with the EWWMP, and regulatory requirements and commitments
- Report incidents of environmental non-compliance to the HSE Department
- In the event of an emergency, contact the appropriate reporting agency as indicated in the EWWMP immediately, as well as the HSE Department

The contractors, subcontractors, FireFly representatives, and site personnel will:

- Familiarize themselves with the EWWMP and any revisions
- Sign that they have read, understood, and accept the conditions of the EWWMP prior to being approved to conduct work
- Implement the EWWMP commitments
- Confirm personnel and subcontractors comply with the EWWMP, requirements of the contract and with applicable laws and regulations
- Maintain a training record and provide updated files on a monthly basis to the HSE Department
- Maintain regular contact with the HSE Department, including, but not limited to:
  - Immediately reporting concerns to the Site Manager and/or Environment Coordinator (FireFly's Environment Team) of any aspect of the EWWMP
  - Immediately reporting any spills or other event that may have an effect on the environment to FireFly's Environment Team (Site Manager, HSE Department) and the appropriate regulatory contacts (i.e., Environment and Climate Change Canada [ECCC])
- Obtain the applicable approvals, authorizations and permits required to conduct the work and provide copies to the Environment Team
- Implement the conditions outlined in approvals, authorizations and permits
- Carry out clean-up, reclamation or restorative measures as directed by the Environment Team and/or appropriate government agency
- Contribute feedback to the Environment Team any changes/comments they feel would improve the quality of the EWWMP

6.0 TRAINING

Through ongoing orientation and awareness training, FireFly will confirm that personnel are competent to do their jobs properly. FireFly will confirm that all personnel understand their roles and responsibilities, their specific work activities, as well as the potential environmental effects of proposed site activities. Workers will receive an orientation from an immediate superior prior to the start of new activities and thereafter on an as-needed basis. New personnel arriving at the site during the construction and operations phases will also receive an orientation, to be given by the HSE Department, or designate. The orientation will include a presentation on environmental protection procedures to be applied at work sites.

7.0 SIGNATURE PAGE

FireFly Metals Canada Limited

The undersigned certify that they have reviewed, and understand their role and responsibility regarding:

MING COPPER-GOLD MINE PROJECT

CONSTRUCTION AND OPERATIONS

ACTIVITIES ENVIRONMENTAL

PROTECTION PLAN

As part of their Ming Copper-Gold Mine Project Safety Orientation.

Name (Printed)	Representing Company
Signature of Above	Date
Name of Manager or Supervisor	
Manager or Supervisor's Signature	Date

APPENDIX A

REVISION REQUEST FORM

SECTION TO BE REVISED:

NATURE OF REVISION:

RATIONALE FOR REVISION:

(i.e., environment/worker safety, etc.)

SUBMITTED BY:

Please submit request to the FireFly's Environment Team (Site Manager & Environmental Manager)

APPENDIX B

REVISION HISTORY LOG

REVISION HISTORY LOG

Version	Date Issued	Revision