



KUDZ ZE KAYAH PROJECT

SEDIMENT AND EROSION CONTROL PLAN

REV 04

June 2026

BMC MINERALS LTD.

This Management Plan has been developed to meet the appropriate subject objectives based on existing regulatory requirements, current or planned site activities, existing and expected site conditions, and designed outcomes at the time of writing. Operational processes/practices for achievement of licence terms and conditions may be updated from time to time as appropriate due to changes to relevant legislation and regulations, changes to site activities or conditions, differences from expected objective outcomes, or improvement of management practices. All rates, capacities, dimensions, weights, volumes and durations in text or figures are based on current feasibility level designs and are subject to change based on final design, licence conditions or site conditions encountered. Updates will be resubmitted to government authorities and/or stakeholders as required.

LIST OF REVISIONS

Issue Date	Revision Number	Description
August 28, 2020	Rev 00	For Issue to Agencies
November 19, 2020	Rev 01	Updated for Issue to Water Board
July 18, 2022	Rev 02	Updated with: responses to Yukon Water Board Secretariate Information Requests; and final edits from BMC review
February 29, 2024	Rev 03	Updated in response to Phase 2/3 IR from EMR dated May 5, 2023 and Interventions from LFN on BMC's Type A Water License Application
June 1, 2026	Rev 04	Administrative updates in response to EMR Completeness Check

SUMMARY OF REVISIONS

Information Request/Intervention	Document	Section	Revision
Revision 02			
YWBS IR-3.1	Sediment and Erosion Control Plan	4.1	Replaced Figure 4-1 with sealed drawing
YWBS IR-3.1	Sediment and Erosion Control Plan	4.1	Replaced Figure 4-2 with sealed drawing
YWBS IR-3.1	Sediment and Erosion Control Plan	4.1	Replaced Figure 4-3 with sealed drawing
Revision 03			
EMR Phase 2/3 IR A concordance table is missing from the plan. BMC is to provide a concordance table that demonstrates how all applicable decision document terms and conditions and proponent commitments have been addressed. This concordance table should also indicate where revisions have been made based upon the information requests outlined in this table.	Sediment and Erosion Control Plan	n/a	Added Table of Revisions and Table of Concordance
LFN Intervention (Exhibit 5.6.4): Memo- WQ Model, WTP Predictions, WQO's Report, EQS.pdf The "Proactive approach" described in Section 1 must include scheduling and timing of construction to limit periods of exposed soils and to avoid seasonal periods of high erosion (i.e., rain, snow melt, or wind).	Sediment and Erosion Control Plan	1	Added discussion on consideration of seasonal environmental conditions with increased potential for erosion when planning construction activities.
EMR Phase 2/3 IR Section 1: Item 1.2 Erosion and Sediment Control Reference Material The Fisheries Act and CCME guidelines must be considered in the plan and are not mentioned in the reference material. The Fisheries Act and CCME guidelines are to be referenced throughout document and included in section 1.2.	Sediment and Erosion Control Plan	1.2	Added reference to Fisheries Act, DFO Codes of Practice and relevant CCME guidelines.
EMR Phase 2/3 IR Section 2: Construction Monitoring Strategies More clarification is needed on erosion and sediment control (ESC) measures required around water bodies after the construction phase where there is potential to have sediment enter the water (e.g., instream works for maintenance). The plan states that during mine construction water quality monitoring will take place until the activity near the water body is completed but should take place during all phases of mining whenever there is potential for erosion. The plan states monitoring during heavy rainfall events, but not spring freshet.	Sediment and Erosion Control Plan	2	Added text to confirm that the monitoring applies to all phases of the Project where activities are undertaken that have a potential to lead to erosion. Added text to confirm that sampling will take place during freshet.

Information Request/Intervention	Document	Section	Revision
BMC to add details around ESC measures during all phases of the project including post construction. The plan should include monitoring during all seasons and activities, but especially spring freshet period.			
LFN Intervention (Exhibit 5.6.4): Memo- WQ Model, WTP Predictions, WQO's Report, EQS.pdf The monitoring strategy is not well defined. It needs to be more prescriptive to ensure the site-specific plans are held to a high standard.	Sediment and Erosion Control Plan	2	Added reference to the Environmental Monitoring, Surveillance and Reporting Plan, where the full project monitoring program is detailed.
LFN Intervention (Exhibit 5.6.4): Memo- WQ Model, WTP Predictions, WQO's Report, EQS.pdf Water quality monitoring for contaminants other than turbidity and pH is deferred to the monitoring plan. This is not acceptable. These plans must be complementary, and each plan must contain the relevant information, even if it is also described in another report.	Sediment and Erosion Control Plan	2	Added reference to the Environmental Monitoring, Surveillance and Reporting Plan, where the full project monitoring program is detailed.
LFN Intervention (Exhibit 5.6.4): Memo- WQ Model, WTP Predictions, WQO's Report, EQS.pdf Water quality monitoring should be more prescriptive. I understand there is a separate plan for this, but a section describing the monitoring and references to the other plan is necessary to understand the linkages. The current section (Section 2) is confusing.	Sediment and Erosion Control Plan	2	Added reference to the Environmental Monitoring, Surveillance and Reporting Plan, where the full project monitoring program is detailed.
LFN Intervention (Exhibit 5.6.4): Memo- WQ Model, WTP Predictions, WQO's Report, EQS.pdf Define who is responsible for the daily ESC inspections. This must be a Qualified Environmental Professional (QEP). Define who is responsible for monitoring instream works and water quality. This must be a QEP	Sediment and Erosion Control Plan	2	Added a commitment that personnel that undertake the monitoring activities identified in Section 2 of the Plan will have been certified through a recognized course in sediment and erosion control.
LFN Intervention (Exhibit 5.6.4): Memo- WQ Model, WTP Predictions, WQO's Report, EQS.pdf Define freshet and storm events when additional ESC inspection is required. Include a description and rationale for the frequency of monitoring during these events.	Sediment and Erosion Control Plan	2	Added definitions of freshet and storm events and noted the potential changes in frequency of monitoring during these events.
LFN Intervention (Exhibit 5.6.4): Memo- WQ Model, WTP Predictions, WQO's Report, EQS.pdf There is no description of the authority of the environmental monitor in this report. There MUST be a statement that the environmental monitor has the authority to stop works if a potential or immediate threat to the environment is identified. This is standard protocol. Without this statement, there is no binding obligation for the site-specific management plans to include this authority.	Sediment and Erosion Control Plan	2	Added clarification that in the first instance any observed problems with sediment and erosion control should be reported to the appropriate supervisor for investigation and rectification. If there is an immediate risk to lives, equipment or environment the person making the observation shall act to stop the activity causing the risk until appropriate mitigation measures can be established.

Information Request/Intervention	Document	Section	Revision
LFN Intervention (Exhibit 5.6.4): Memo- WQ Model, WTP Predictions, WQO's Report, EQS.pdf "Monitoring will be conducted daily until the activity near the water body has been completed and water quality at the downstream locations returns to background levels." This statement implies that work near water bodies is expected to impact water quality within the downstream environment. This is unacceptable. The purpose of the ESC measures is to prevent an impact to the water quality within the water bodies. Monitoring of water quality is used to confirm compliance or to detect issues that need to be addressed.	Sediment and Erosion Control Plan	2	Added clarification that water quality monitoring will be completed to verify compliance with approved water quality guidelines. If construction activities do affect water quality (but water quality is still within approved guidelines), monitoring will be conducted daily until the activity near the water body has been completed and water quality at the downstream locations returns to background levels.
LFN Intervention (Exhibit 5.6.4): Memo- WQ Model, WTP Predictions, WQO's Report, EQS.pdf In situ water quality sampling includes temperature, dissolved oxygen, conductivity, turbidity, and pH parameters. However, the water quality guidelines provided are only for pH, turbidity (NTU), and total suspended solids (TSS). Note that TSS requires submission of samples to a laboratory, unless a site-specific regression curve is created. Temperature, dissolved oxygen, and conductivity are all useful parameters that should be monitored during regular water quality monitoring, as these parameters can provide an indication of other impacts occurring within the project area.	Sediment and Erosion Control Plan	2	Clarified that real time in-situ water parameters that will be monitored are: temperature, pH, dissolved oxygen, turbidity, and conductivity.
EMR Phase 2/3 IR Section 3: Erosion and Sediment Sources Plan does not clearly consider all areas stripped of the protective vegetative layer as a source of erosion and sediment. BMC to include consideration of all areas stripped of vegetation as sources for erosion and requiring sediment controls.	Sediment and Erosion Control Plan	3	Added "Areas where the protective vegetative layer has been stripped for construction activities where reclamation of the exposed surface has not been completed".
LFN Intervention (Exhibit 5.6.4): Memo- WQ Model, WTP Predictions, WQO's Report, EQS.pdf Please add the following additional sources of erosion to the plan, along with specific monitoring and mitigation strategies: • Snow melt; • Freeze-thaw; and • Vegetation removal.	Sediment and Erosion Control Plan	3	Snow melt and freeze-thaw have been specifically identified in the sources of erosion and sediment. Vegetation removal has also been added as detailed in row above.
LFN Intervention (Exhibit 5.6.4): Memo- WQ Model, WTP Predictions, WQO's Report, EQS.pdf Separation of contaminated and non-contaminated materials is not discussed in this report. This is a concern. Clean soils must be kept separate from any soils/sediment with suspected contamination. Suspected contaminated soils/sediments must be contained, sampled, and dealt with accordingly.	Sediment and Erosion Control Plan	3	Added requirement that if collected sediments are suspected to contain contaminants that they shall be tested and if confirmed, managed and disposed on in accordance with the Waste Management Plan.

Information Request/Intervention	Document	Section	Revision
LFN Intervention (Exhibit 5.6.4): Memo- WQ Model, WTP Predictions, WQO's Report, EQS.pdf There is no human health plan regarding potentially contaminated soils/sediments. Explain how site personnel protect themselves when dealing suspected contaminants.	Sediment and Erosion Control Plan	3	Added text that suitable personal protection equipment shall be used when working with suspected or confirmed contaminated sediments.
EMR Phase 2/3 IR Section 4: Item 4.2.2 Operational Water Management Ponds The plan states that the ponds are designed for a 1:200-year event. BMC to ensure that water management ponds are designed to the class of the facility as laid out in YG's 2023 MWMFG document	Sediment and Erosion Control Plan	n/a	BMC confirms that all IFC designs that will be submitted as part of construction approvals will be compliant with all applicable legislation and guidelines, including the Mine Waste Management Facility Guidelines. If the designs change from that currently submitted the text in this section will be revised accordingly.
EMR Phase 2/3 IR Section 4: Typical design drawings The Yukon Government has its own typical design drawings for erosion and sediment control measures like silt fence and slope stability etc. Department of Highways and Public Works issue these standards. BMC to utilize Yukon design criteria and typical drawings as opposed to other jurisdictions standards where possible. Contact Department of Highways and Public Works at hpw-info@yukon.ca or 867-667-8820 to get the most up to date Yukon specific design criteria.	Sediment and Erosion Control Plan	4.4	BMC contacted YG and received only one drawing for a silt fence (Figure 4-5 has been updated to include YG's figure). EMR advised BMC to use the drawing provided and maintain the others from Alberta ENV. Plan will be updated with Yukon drawings if/when they become available.
LFN Intervention (Exhibit 5.6.4): Memo- WQ Model, WTP Predictions, WQO's Report, EQS.pdf Section 4.1 Intercept Ditching notes that water quality will be sampled at discharge and mixing zones of the receiving environment to monitor compliance with Canadian Council of Ministers of the Environment; however, Section 2 lists monitoring stations as only being 25m upstream and downstream of work areas and only monitoring for pH, turbidity (NTU), and TSS. This is contradictory. Please identify which Canadian Council of Ministers of the Environment parameters will be used for compliance monitoring and clarify these contradictory statements.	Sediment and Erosion Control Plan	4.1	Clarified that water quality samples will be taken 25m upstream and 25m downstream of the receiving environment, and that monitoring will measure compliance with the approved water quality guidelines.
EMR Phase 2/3 IR Section 4: Item 4.5 Progressive Reclamation The plan states that all vegetation and topsoil from disturbed areas will be stored in selected locations around the site (Figure 4-3). Figure 4.3 does not show a topsoil stockpile area. BMC to clarify where the topsoil stockpiles will be, and any specific ESC measures for the lifespan of this stockpile.	Sediment and Erosion Control Plan	4.5	Figures 4-1, 4-2 and 4-3 all show stockpile areas. Modified text "To improve reclamation success, all vegetation and topsoil from disturbed areas will be stored in selected locations around the site (Figure 4-3) and kept separate from inorganic material. These stockpiles will have erosion control measures such as erosion control blankets and silt fences installed to manage erosion until the stockpiles are used for reclamation works. Stockpiles will be a minimum of 30 m from watercourses."

Information Request/Intervention	Document	Section	Revision
LFN Intervention (Exhibit 5.6.4): Memo- WQ Model, WTP Predictions, WQO's Report, EQS.pdf Section 4.5 Progressive Reclamation should include reference to a separate Reclamation and Closure Plan. This section should also include reference to invasive species management to prevent the spread or establishment of invasive plant species	Sediment and Erosion Control Plan	4.5	Added references to the Reclamation and Closure Plan and the Environmental Monitoring, Surveillance and Reporting Plan (for management of invasive plant species).
LFN Intervention (Exhibit 5.6.4): Memo- WQ Model, WTP Predictions, WQO's Report, EQS.pdf Section 4.12 Flocculants does not describe the applications in which flocculants should be used. Flocculant use must be monitored and controlled and only applied in appropriate scenarios. Use of flocculants in a watercourse should not be permitted. Please revise this section to include information about flocculant use, monitoring, and disposal	Sediment and Erosion Control Plan	4.12	Additional description and detail has been provided, with further information included in Appendix A in a Flocculant Use Plan.
LFN Intervention (Exhibit 5.6.4): Memo- WQ Model, WTP Predictions, WQO's Report, EQS.pdf Section 4.14 Erosion and Sediment Control in Riparian Areas states, "If work is to occur between March 1 and August 31, pre-clearance surveys of songbird nesting sites must be completed prior to any site clearing or construction." This is a very incomplete mitigation measure. Reference to other management plans (like a Wildlife Management Plan) should be included, as well as identification of who is responsible for conducting the pre-clearance surveys (i.e., QEP), how frequently, how many days prior, etc.	Sediment and Erosion Control Plan	4.14	Reference added to Appendix B of the Wildlife Protection Plan (KZK Pre-Disturbance Nesting Sweep – Protocol). Revised dates for pre-clearance surveys to be consistent with that of Appendix B of the Wildlife Protection Plan.
LFN Intervention (Exhibit 5.6.4): Memo- WQ Model, WTP Predictions, WQO's Report, EQS.pdf Section 4.14 Erosion and Sediment Control in Riparian Areas states: • "All appropriate ESC measures will be installed prior to the commencement of construction activities." This is too vague; and • "Extra ESC materials and pumps will be on site in the event of an emergency or unplanned event." This is also too vague.	Sediment and Erosion Control Plan	4.14	Added further discussion that control measures will be installed in accordance with the Environmental Protection Plan developed by the contractor(s) undertaking the work. The Environmental Protection Plan will be approved by BMC prior to commencement of works. Specific mitigation measures will be developed taking the planned works and the specific location into account, and may include the mitigation measures noted in this section.
LFN Intervention (Exhibit 5.6.4): Memo- WQ Model, WTP Predictions, WQO's Report, EQS.pdf Section 4.15 Erosion and Sediment Control for Instream Works: A Fish and Fish Habitat Management Plan must be developed as this short section, and the ESC Plan in general, are woefully inadequate for describing mitigation measures to protect fish and fish habitat. Fish salvage has not been included as a measure for work during the least risk window. Fish may be present during the least risk window and all efforts must be made to prevent the unauthorized death of fish (which is a contravention of the Fisheries Act).	Sediment and Erosion Control Plan	4.15	The text for this section has been revised to include additional mitigations for fish and fish habitat.
None	Sediment and Erosion Control Plan	4.16	Section on Erosion and Sediment Control for Roadways added to document commitments made during YESAB assessment.

LIST OF ACRONYMS AND ABBREVIATIONS

BC MOE	British Columbia Ministry of Environment
BMC	BMC Minerals Ltd.
CCME	Canadian Council of Ministers of the Environment
CSA	Canadian Standards Association
ESC	Erosion and Sediment Control
ha	hectare
Kaska	Kaska First Nations
PAM	polyacrylamide
SDS	Safety Data Sheet
TSS	Total Suspended Solids

GLOSSARY

Channelizing: Alteration of a stream channel by widening, deepening, straightening, cleaning, or paving certain areas to change flow characteristics.

Contact Water: Surface water or other water that comes into contact with disturbed surfaces within the footprint of the Mine site and associated infrastructure.

Erosion: The mobilization of land surfaces by water, wind, or other natural agents.

Qualified Professional: A person who has education, experience and training in the recognition, evaluation, and control of hazards associated with the work.

Sheet Erosion: The removal by surface runoff of a fairly uniform layer of soil from a bank slope.

Sheet Flow: Runoff which flows over the ground surface as a thin, even layer, not concentrated in a channel.

Slumping: Movement of a mass of soil down a bank into the channel, similar to a landslide.

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1 INTRODUCTION

BMC Minerals Ltd. (BMC) proposes the development of the Kudz Ze Kayah Project (the Project) in southeast Yukon and within Kaska Traditional Territory. The Project is a proposed open pit/underground copper, lead, zinc, gold, and silver mine and processing facility located approximately 115 km southeast of Ross River, Yukon.

Earth-moving projects have the potential to accelerate erosion by exposing large areas of soil to rain, surface water, and wind. If not properly managed, soils can be eroded from disturbed landscapes and deposited in the surrounding environment and watercourses. This Sediment and Erosion Control Plan outlines methods that will be used to reduce erosion and deposition of sediments during construction and operations of the Project.

The intent of the Sediment and Erosion Control Plan is to provide site personnel with strategies to manage and minimize erosion and sedimentation on site. The Erosion and Sediment Control (ESC) methods outlined in this plan are not site specific. Site specific ESC measures will be developed in Environmental Protection Plans to be prepared by contractors prior to commencement of each construction activity. These will include consideration of natural drainages that occur in cleared areas and incorporate appropriate sediment and erosion control measures. Environmental Protection Plans will be developed in advance to meet BMC requirements and will be subject to BMC approval. Environmental Protection Plan's will be in accordance with the measures set out in this plan, will be task specific and field fit depending on site and climatic conditions. In general, the Project will take a proactive approach to sediment and erosion control by:

- Limiting the area of exposed soils by minimizing clearing of vegetation;
- Implementing ESC mitigations prior to construction;
- Directing runoff and surface water around active construction and operational areas;
- Progressively revegetating disturbed areas so as to improve soil stability and reduce erodible surfaces; and
- Removing sediment control measures when no longer required.

Consideration will be given to seasonal environmental conditions with increased potential for erosion (heavy rain, snow melt, wind) when planning construction activities. Where possible construction works will be scheduled outside these periods. If it is not possible to schedule outside these periods, environmental monitoring of construction will be used to assess erosion control measures. In the event that erosion control measures are assessed as not performing adequately, construction will then in accordance with modern adaptive management strategies, modified solutions will be implemented to mitigate and control the impact, as detailed in the Adaptive Management Plan.

Additional ESC mitigation measures are described in this plan for the purpose of addressing construction, temporary activities, and emergency situations. This plan will be amended as the Project design and implementation plans become available.

The measures outlined in this plan are specific to the prevention and mitigation of erosion and the treatment of water containing suspended solids.

1.1 SEDIMENT AND EROSION CONTROL PLAN SCOPE

The aim of the Sediment and Erosion Control Plan is to reduce the area of soil exposed to erosive forces, to emphasize erosion control measures, and to limit the volume of contact water to be managed by redirecting non-contact surface water around construction and operation activities. All site personnel will receive general training on ESC measures during the site orientation, site-specific training and during tool box meetings. Activity specific workplans will outline ESC measures that are to be installed prior to the start of each construction activity.

Standard construction and operational practices will be the primary tool to mitigate erosion and related sedimentation risks throughout the life of the Project. Control methods outlined in this section provide options that can be tailored depending on site conditions, the type of erosion, and risk of sedimentation to watercourses. This plan also contains ESC reference materials that provide additional mitigation measures and installation methodologies (Section 1.2). Each site and construction activity will require specific ESC measures, the site Environmental Department will provide construction and operations personnel with guidance on the correct measures to use.

Common construction activities that have the potential to expose soils to erosive forces include, but are not limited to:

- Clearing of vegetation and soil;
- Excavations;
- Blasting;
- Road and trail construction;
- Watercourse diversions or crossings;
- Stockpiling material; and
- Runoff from active work areas.

Contingency supplies of sediment and erosion control materials will be maintained on site, and workers will be sufficiently trained in their appropriate installation and maintenance.

1.2 EROSION AND SEDIMENT CONTROL REFERENCE MATERIAL

The following sediment and erosion control guides provide thorough descriptions of ESC mitigation measures, their use, and proper installation methods including typical specification drawings:

- Preferred Practice for Works Affecting Yukon Waters (Yukon Government, 2019); and
- Field Guide for Erosion and Sediment Control (Government of Alberta, 2011).

In addition to the guides noted above, the following references were referenced in the preparation of this plan:

- *Fisheries Act* (Canada, 1985);
- DFO Codes of Practice (<https://www.dfo-mpo.gc.ca/pnw-ppe/practice-practique-eng.html>);
- Clear span bridges;
- Culvert Maintenance;
- Ice bridges and snow fills;
- End of pipe fish protection screens for small water intakes in freshwater;
- Canadian Council of Ministers of the Environment. 2002. Canadian water quality guidelines for the protection of aquatic life: Total particulate matter. In: Canadian environmental quality guidelines, 1999, Canadian Council of Ministers of the Environment, Winnipeg; and
- CCME Canadian Environmental Quality Guidelines, Water Quality Guidelines for the Protection of Aquatic Life (CCME, 2016).

1.3 PLAN REVIEW AND EXECUTION

BMC has had extensive engagement with Ross River Dena Council (RRDC) including community meetings in Ross River, Elders Oversight Committee Meetings, meetings with Chief and Council and engagement with RRDC's wholly owned environmental consultancy, Dena Cho Environmental and Remediation Inc. (Dena Cho). As part of this ongoing engagement, prior to this Plan being finalized Dean Cho conducted a detailed independent review of the draft plan. Issues raised during the Dena Cho review were addressed collaboratively through a number of workshops and where appropriate this plan was amended and additional commitments added.

BMC and Ross River Dena Council (in its role as lead community for the Kaska Nations, including Liard First Nation) are parties to an existing Socio-Economic Participation Agreement (SEPA) for the KZK Project, which may be updated from time to time.

2 CONSTRUCTION MONITORING STRATEGIES

Environmental monitoring and adaptive management are key components of environmental protection and risk management for the Project. Not only is monitoring used to review, observe and report on potential effects resulting from Construction and Operational activities, it is also a critical component of assessing potential risk during pre-construction planning and forms part of the feedback component of adaptive management. To reduce environmental risk, environmental monitoring needs to anticipate potential effects, be commensurate with the area sensitivity, and be designed to assess that the mitigation/avoidance strategies are achieving the environmental goals and objectives and ensuring compliance with regulatory agency approvals during all Project phases.

The Environmental Monitoring, Surveillance and Reporting Plan (BMC, 2026a) provides detailed monitoring programs for surface water quantity (Section 4) and quality (Section 5) and should be referred to for detailed information. The following monitoring activities are specific to the requirements of the Sediment and Erosion Control Plan during construction and includes but are not limited to:

- Daily water quality sampling (turbidity and pH) during heavy rainfall events and freshet (in certain cases, depending on the magnitude of the freshet, storm event, and/or proximity and sensitivity of the receiving environment, the frequency of inspection and water quality monitoring will be increased to hourly and/or the activity will be paused until it is safe to resume);
- Daily inspection of silt fencing, silt curtains, gravel berms, check dams and bale structures for status and /or necessary repair;
- Inspection of ESC measures during freshet and storm events;
- Daily site inspections for visible signs of erosion and sediment movement (e.g., riling, slumping, channelizing, flooding, concavity.) or possible risk of erosion, including along the water edge for sign of turbidity runoff;
- Daily inspections of drains, ditches, culverts, swales, and catch basins for status and/or necessary repair; and
- Daily inspection and status of exposed slopes, stockpiles, and spoils.

These monitoring activities will also be undertaken during other phases of the Project life (Construction, Operations, Active Closure and Transitional Closure) where activities are undertaken that have a potential to lead to erosion.

The monitoring activities noted above will be completed by personnel that have been certified through a recognized course in sediment and erosion control.

Freshet typically occurs in late May or early June, and the onset of freshet can be visually observed through increased volumes of water within the waterbodies in the Project area and/or empirically

detected through the real time data collected from the data loggers at each of the hydrometric stations.

Storm events can be predicted by checking the local forecast or identified visually when rain starts to fall heavily at the site and can be empirically measured from the Project's precipitation gauge which is part of the Project's climate station.

If the monitoring activities identify that sediment and erosion control measures are not working as well as anticipated, in the first instance it will be reported to the appropriate supervisor of the works for investigation and rectification as required (which may include modifying activities or temporarily ceasing work until corrective measures are implemented). In the event that a person observes that there is an immediate risk to lives, equipment or environment, that person shall act to stop the activity causing the risk until appropriate mitigation measures can be established.

For instream works, water quality meters will be available on site for real-time (in situ) temperature, pH, dissolved oxygen, turbidity, and conductivity measurements. Applicable water quality guidelines are presented in Table 2-1.

Water quality monitoring will be conducted 25 m upstream and 25 m downstream of work areas for Construction phase activities. Water quality monitoring will be completed to verify compliance with approved water quality guidelines. If construction activities do affect water quality (but water quality is still within approved guidelines), monitoring will be conducted daily until the activity near the water body has been completed and water quality at the downstream locations returns to background levels.

Table 2-1: Water Quality Guidelines for the Protection of Freshwater Aquatic Life

Parameter	Maximum Allowable
Turbidity	CCME – An Increase of 8 NTU above background at any one time for a duration of 24 hours in all waters during clear flows or in clear waters. An increase of 2 NTU above background at any one time for a duration of 30 days in all water during clear flows or in clear waters. An increase of 8 NTU above background at any time when the background is 8 – 80 NTU during high flows or in turbid waters. A 10% increase when the background is >80 NTU at any time during high flows or in turbid waters.
pH	CCME – For freshwater, 6.5 – 9.0.
Dissolved Oxygen	CCME – minimum of 5.6 mg/L
Temperature	There are no CCME or BC ENV guidelines for temperature
Conductivity	There are CCME or BC ENV guidelines for conductivity

3 EROSION AND SEDIMENT SOURCES

There are numerous potential sources of erosion and sediment transport resulting from construction and operational activities at the site. The key areas of concern at the site include:

- Steep slopes present throughout the site, and various other areas with high potential for wind and water induced erosion;
- Heavy rainfall events, snow melt, freshet runoff and the freeze-thaw cycle can create erosion and sedimentation in areas that did not have previously known erosion;
- Heavily trafficked areas and land disturbance caused by heavy mobile equipment can be a continuous source of soil displacement and compaction. With compaction, infiltration is reduced, and surface water has a greater potential for erosion. Proper planning prior to the commencement of heavy equipment and construction work can limit the disturbed footprint and mitigate erosion potential. During unusually heavy rain events oversaturated soils can exacerbate the problem; and
- Areas where the protective vegetative layer has been stripped for construction activities where reclamation of the exposed surface has not been completed.

The source of sediment should be considered when determining appropriate management of collected sediments. If it is suspected that collected sediments contain contaminants, they shall be tested for contaminants, and if confirmed, the sediments shall be managed and disposed of in accordance with the Waste Management Plan (BMC, 2026b).

Suitable personal protection equipment will be used by personnel working with sediments that are either suspected or confirmed as containing contaminants. Advice on appropriate PPE will be sourced from the Safety Department and Environmental Department prior to managing sediments that are suspected or confirmed as containing contaminants.

4 EROSION AND SEDIMENT CONTROL MEASURES

A range of erosion and sediment control measures will be implemented during construction and operation of the project, as detailed in the following sections. Control measures that are implemented will be:

- Inspected regularly at a frequency commensurate with the risk, nature, location, and seasonality of the work;
- Adapted or revised, as appropriate;
- Repaired as necessary in a timely manner, commensurate with the risk, nature, location, and seasonality of the work; and
- Maintained until construction is completed and the affected areas are sufficiently stabilized and revegetated so there is minimal risk of erosion or sedimentation at the site as a result of Project activities.

If monitoring of Project activities determines that management of erosion is insufficient, adaptive management strategies will be implemented to mitigate and control the impact, as detailed in the Adaptive Management Plan.

4.1 INTERCEPT DITCHING

Diverting water around the Project site will reduce the volume of surface water flowing through disturbed sites, and the volume of water to be managed. Ditches will also be constructed around Project infrastructure (*i.e.*, the Open Pit, Process Plant facility, Storage Facilities, and the Water Treatment Plant). Figure 4-1 and Figure 4-2 show the conceptual location of diversion ditches around the Project site during different phases of Construction and Figure 4-3 shows the conceptual location of diversion ditches for the final mine layout. Actual locations will be field fit depending on site specific conditions.

All water collection and conveyance systems have been designed by qualified engineers on BMC's design team and are included in the Water Management Plan (BMC, 2026c) and Road Construction Plan (BMC, 2026d). Ditches will be constructed according to engineered drawings and the bottoms of the ditches will be lined and/or armored as necessary to prevent erosion. Depending on the grade and catchment area, check dams will be installed to reduce water velocity and promote sediment deposition. Ditch banks will be seeded with the Project approved seed mixture to promote soil stability; native seed mix composition varies from year to year and will be updated annually. Settling ponds will be incorporated in various locations as outlined on the engineered drawings or as updated from time to time.

The site Environmental Department will inspect diversion ditches regularly, and more frequently as required in areas proximate to active construction activities, or during freshet and after heavy rain events to ensure they are functioning as intended and determine when maintenance is required.

Water quality samples will be taken 25 m upstream and 25 m downstream of the receiving environment to monitor the Project's compliance with approved water quality guidelines.

4.2 WATER MANAGEMENT PONDS

The main purpose of settling ponds is to promote sedimentation by intercepting runoff, reducing velocity, and increasing retention time. The majority of settling ponds constructed on the Project will be structures associated with diversion ditches around Project infrastructure, but temporary ponds will also be used for road construction and clearing activities. Ponds associated with diversion ditches will be constructed as per engineered design drawing and routinely maintained (*e.g.*, removal of deposited sediments). Design criteria for the various water management ponds can be found in Section 4.2 of the Water Management Plan (BMC, 2026c). The site Environmental Department will monitor water quality from settling ponds where they discharge directly to off site drainages.

4.2.1 Temporary Settling Ponds

During the early phases of construction, temporary settling ponds will be constructed to allow sediment to settle before water is discharged to the surrounding environment. Where possible, settling ponds should be constructed in natural receiving environments (*i.e.*, depressions). They should be roughly rectangular with a length to width ratio of 5:1 (BC MOE, 2015). The inlet and outlet structures should be on opposite sides of the pond. The outlet structures will be armored with nonerosive material and constructed 0.5 m lower than the banks of the pond to prevent overflow during storm events. If a settling pond discharges directly to a fish bearing watercourse, the outlet structure will be constructed to be impassable for fish.

4.2.2 Operational Water Management Ponds

The Class A, B, and C Storage Facilities, and the Overburden Stockpile each include a downstream pond to manage sediment and water quality (Figure 4-3). In addition, the Pit Rim Pond will manage sediment from water pumped from the open pit or underground workings. All runoff generated in the Project site will be collected and conveyed to ponds before further treatment and/or discharge to the receiving environment.

A qualified engineer has designed the Collection and Water Management Ponds to store water from storm events and trap sediment particles of 10 microns or larger. The Class A and B Storage Facility Collection Ponds have been designed to manage a 1 in 200-year, 24-hour storm event (including 1 m freeboard) with projected freshet inflow. The Overburden and Class C Storage Facility Collection Ponds have been designed to treat sediment for the 1 in 10-year, 24-hour peak discharge (including 1 m freeboard) with Project freshet inflow. Sediment will be periodically removed from these ponds to ensure they have adequate capacity to function as designed. The site Environmental Department will monitor the effluent prior to discharge to determine if water requires additional treatment. Details of the monitoring program are included in the Environmental Monitoring, Surveillance and Reporting, Plan. Detailed design of the Collection and Water Management Ponds is included in the Water Management Plan (BMC, 2026c).

4.3 CHECK DAMS

A check dam is a small, sometimes temporary, dam constructed across a swale, drainage ditch, or waterway to counteract erosion by reducing water flow velocity, and its primary purpose is to reduce the erosive force of water by decreasing its velocity. If installed and maintained properly, check dams can also aid in the settlement of coarse sediments. The dams are typically constructed out of clean non-acid generating rock; however, sandbags, straw waddles, and synthetic barriers can also be used in lower velocity water channels.

For check dams to be effective it is important that the materials selected are appropriate for the volume and velocity of water flow within and the gradient of the ditch. Check dams should not be placed across creeks or high discharge ditches.

Check dams will be installed in ditches to reduce water velocity and promote sediment deposition. The frequency and number of check dams will depend on the ditch gradient, catchment area, and volume of water conveyed. The following guidelines should be taken into consideration when constructing check dams:

- Structures will be constructed out of non-erodible materials, preferably rock;
- They should extend the full length of the ditch;
- The center of each dam should be a minimum of 0.3 m lower than the banks of the ditch;
- Construction material will be sized based on water volume and velocity (i.e., materials that will withstand average ditch velocities);
- Avoid constructing dams greater than 0.8 m in height to prevent impounding large volumes of water;
- The downstream slope should be gentle to prevent scour erosion as water flows over the dam;
- Structures should be spaced to ensure that the top of the downstream dam is at least greater than or equal to the base of the dam immediately upstream (Figure 4-4). However, the exact placement of dams will be subject to site conditions; and
- Regular inspection and maintenance are required to ensure check dams are functioning as intended. Sediment should be cleared when it reaches one-third the height of the check dam.

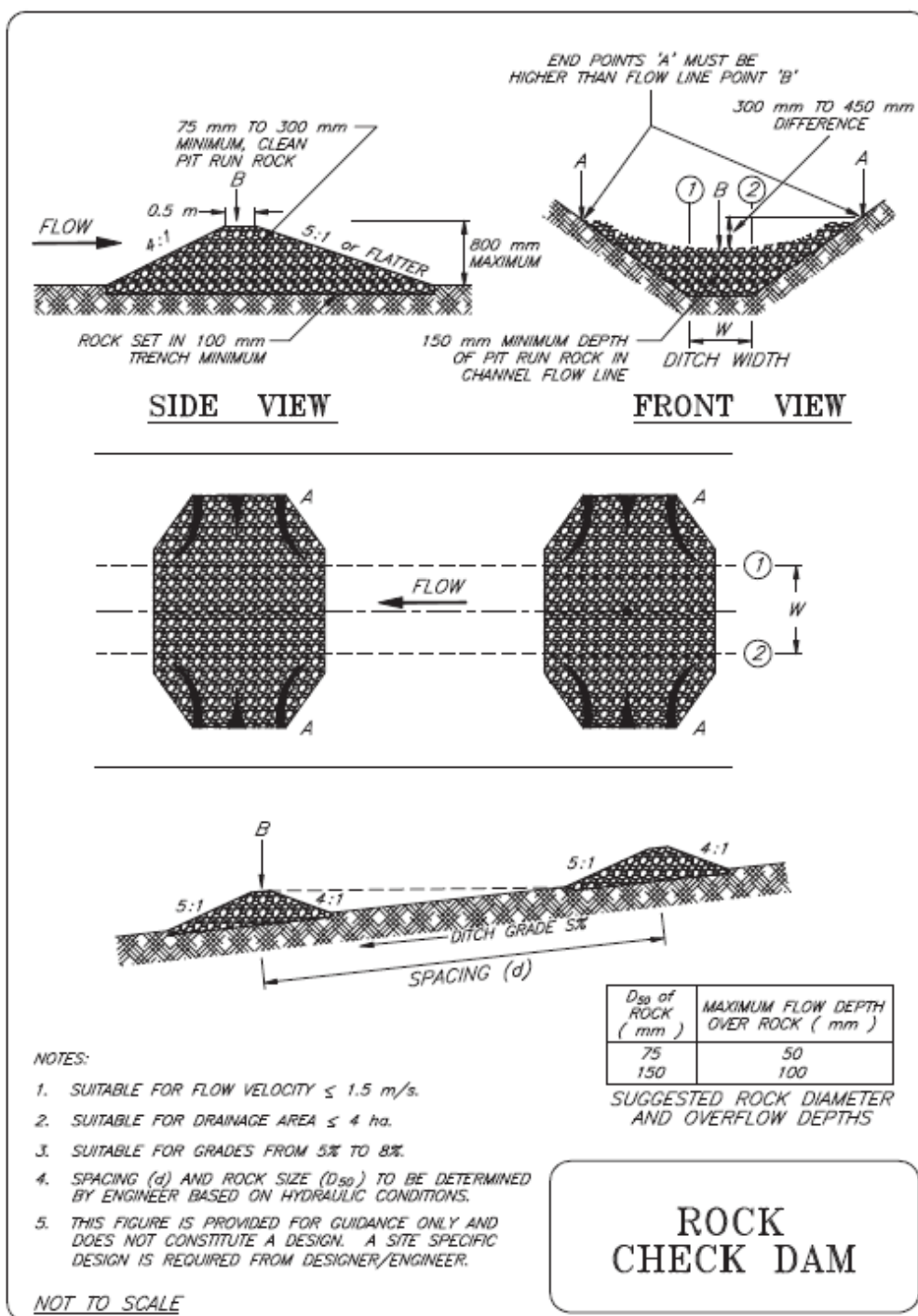


Figure 4-4: General Guide for the Construction of Rock Check Dams

Source: Field Guide for Erosion and Sediment Control, Government of Alberta June 2011

4.4 SILT FENCE

A silt fence is a semi-permeable geofabric that is installed on wooden or metal posts at the bottom of slopes to help contain sheet flow and promote the deposition of coarse sediments (Figure 4-5). It should be installed at a minimum of 1.5 to 2 m from the bottom of a slope along elevation contours in a “J” or “smile” configuration (Figure 4-6). A silt fence is most effective when used with a combination of upstream erosion control measures. The following guidelines will be taken into consideration when installing a silt fence:

- Slopes above a silt fence should not exceed 30 m in length. If exposed slopes are greater than 30 m long, additional erosion measures are required (e.g. erosion control blankets, straw wattles, or slope preparation);
- Slopes above a silt fence should not be greater than 2H:1V;
- Posts need to be installed on the downslope side of the geofabric (filter fabric) with the fabric properly keyed in, backfilled, and compacted (Figure 4-5);
- Silt fences should not be used in areas of high water discharge, across drainage channels, or used as check dams; and
- Silt fences require inspection and maintenance after every rain event.

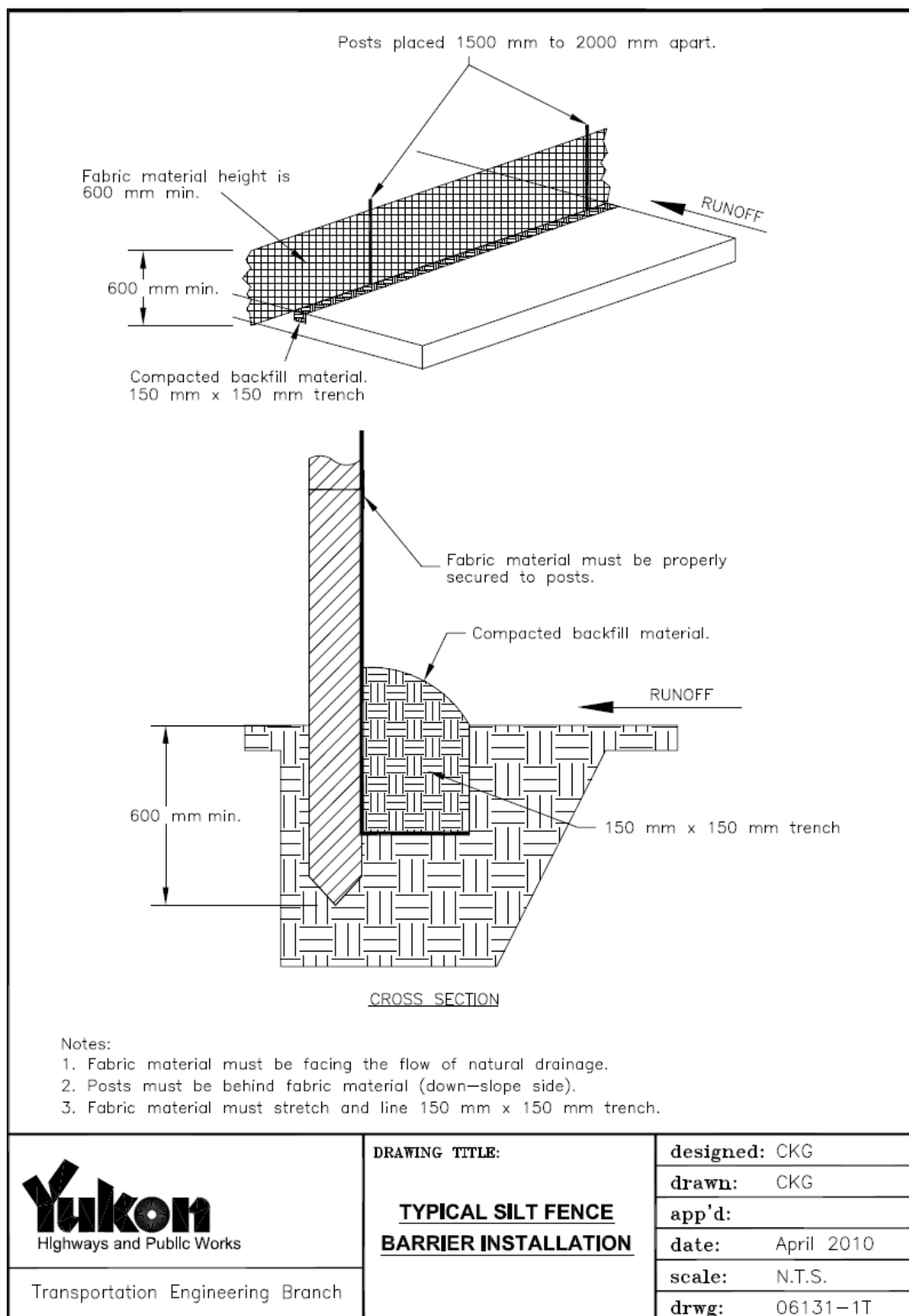


Figure 4-5: Typical Silt Fence Barrier Installation

Source: Drawing 06131-1T, Yukon Government April 2010.

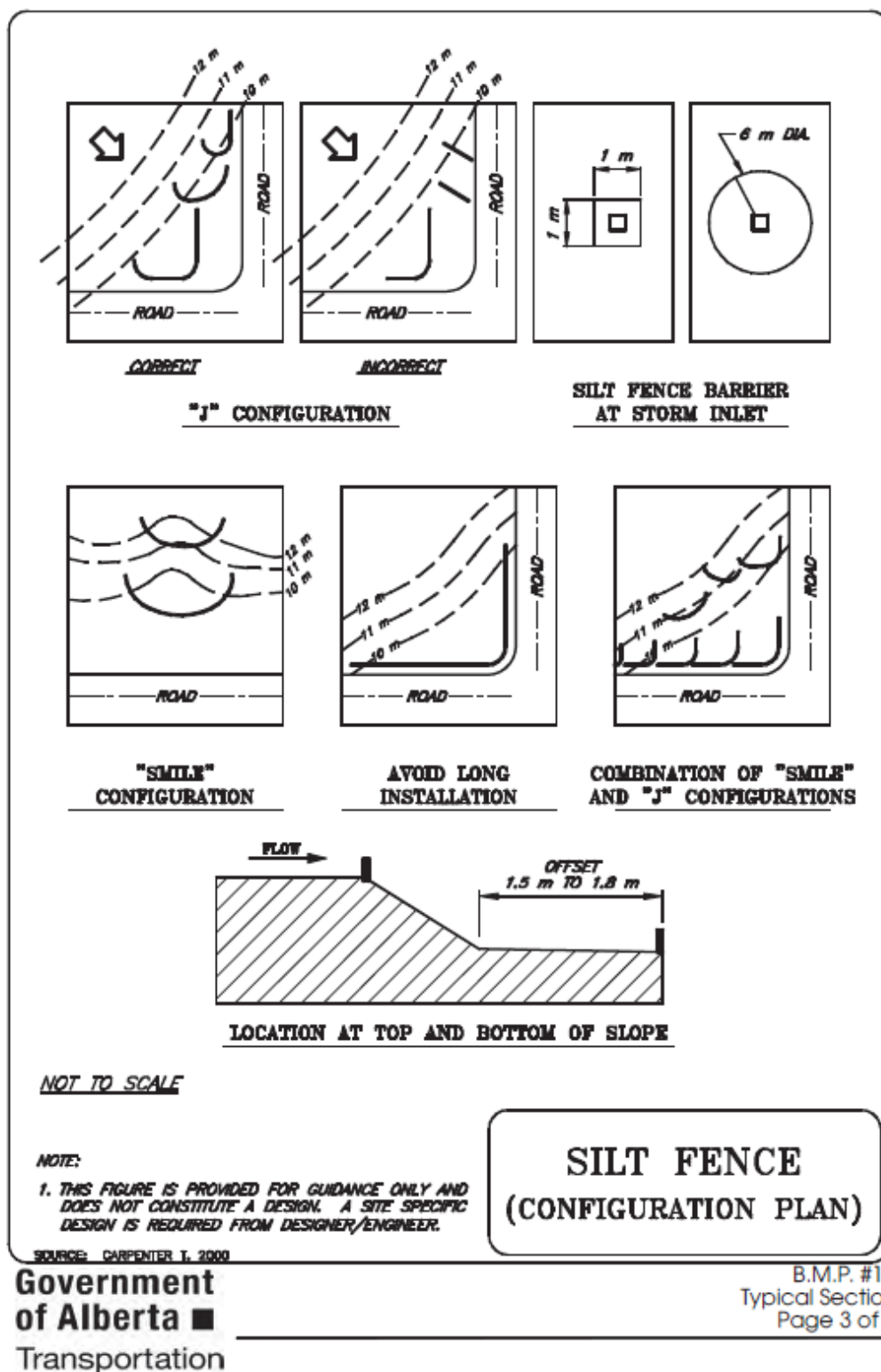


Figure 4-6: Example of "J" and "Smile" Configurations

Source: Field Guide for Erosion and Sediment Control, Government of Alberta June 2011

4.5 PROGRESSIVE RECLAMATION

Revegetation is an effective erosion control measure because roots aid in stabilizing loose soils, foliage reduces the impact of raindrops, and the vegetative mat decreases the velocity of sheet flow. As an overall ESC strategy for the Project, clearing will be limited to only those areas necessary for the Project mine and infrastructure and disturbed any areas will be progressively reclaimed throughout the life of the Project where practicable, as noted in the Reclamation and Closure Plan (BMC, 2026e). Management of invasive plant species will be in accordance with that detailed in the Environmental Monitoring, Surveillance and Reporting Plan (BMC, 2026a).

To date there have been two approved seed mixtures utilized on the Project (Table 4-1), a dry area seed mix and a wet area seed mix. This list will be expanded and/or updated to include additional site-specific native plant species in consultation with Kaska and as more information becomes available from the ongoing revegetation research programs.

Table 4-1: Current Seed Mixtures Used for Site Reclamation

Dry Area Seed Mix (2015)	Dry Area Mix (2016)	Dry Area Mix (2017 and 2018)	Wet Area Seed Mix (2015 and 2016)
37% Violet Wheatgrass (<i>Elymus violaceus</i>)	37 % Slender Wheatgrass (<i>Elymus trachycaulus</i>)	37% Slender Wheatgrass	40% Violet Wheatgrass
25% Rough Fescue (<i>Festuca altaica</i>)	25% Rough Fescue	15% Ticklegrass (<i>Agrostis scabra</i>)	33% Fowl Bluegrass (<i>Poa palustris</i>)
25% Rocky Mountain Fescue (<i>Festuca saximontana</i>)	25% Rocky Mountain Fescue	35% Rocky Mountain Fescue	27% Tufted Hairgrass
13% Glaucous Bluegrass (<i>Poa glauca</i>)	13% Tufted Hairgrass (<i>Deschampsia cespitosa</i>)	13% Tufted Hairgrass	

To improve reclamation success, all vegetation and topsoil from disturbed areas will be stored in selected locations around the site (Figure 4-3) and kept separate from inorganic material. These stockpiles will have erosion control measures such as erosion control blankets and silt fences installed to manage erosion until the stockpiles are used for reclamation works. Stockpiles will be a minimum of 30 m from watercourses. During reclamation growth media will be placed over disturbed areas, track packed, and seeded with a site approved seed mixture. Depending on the site, seedings may also be accompanied by transplants of live nursery stock or cuttings (*i.e.*, live stake willows). The site Environmental Department will inspect restoration sites regularly to monitor revegetation success. Additional monitoring will be conducted following storm events and freshet with a focus on inspecting the sites for erosion and additional maintenance requirements.

4.5.1 Soil Preparation

The first step in restoration of a disturbed site will be to decompact inorganic soils in the rooting zone, usually to 30 to 60 cm below the surface. This can be done with the ripping blade of a dozer in large areas, or with the bucket of an excavator in smaller areas. After decompaction is complete growth media will be spread evenly across the site. Prior to seeding of sloped areas, growth media should be roughened by the use of tracked equipment. If available, equipment with wide low ground impact tracks should be used to limit soil compaction. The track marks should be aligned

perpendicular to, not parallel to, the slope (Figure 4-7). Roughening the soil creates small rills that break up the effective length of the slope, thereby reducing the velocity of sheet flow and creating microclimates beneficial to plant growth.

Note: care should be taken not to recompact restoration areas, one pass with a piece of tracked equipment is usually sufficient for soil roughening.

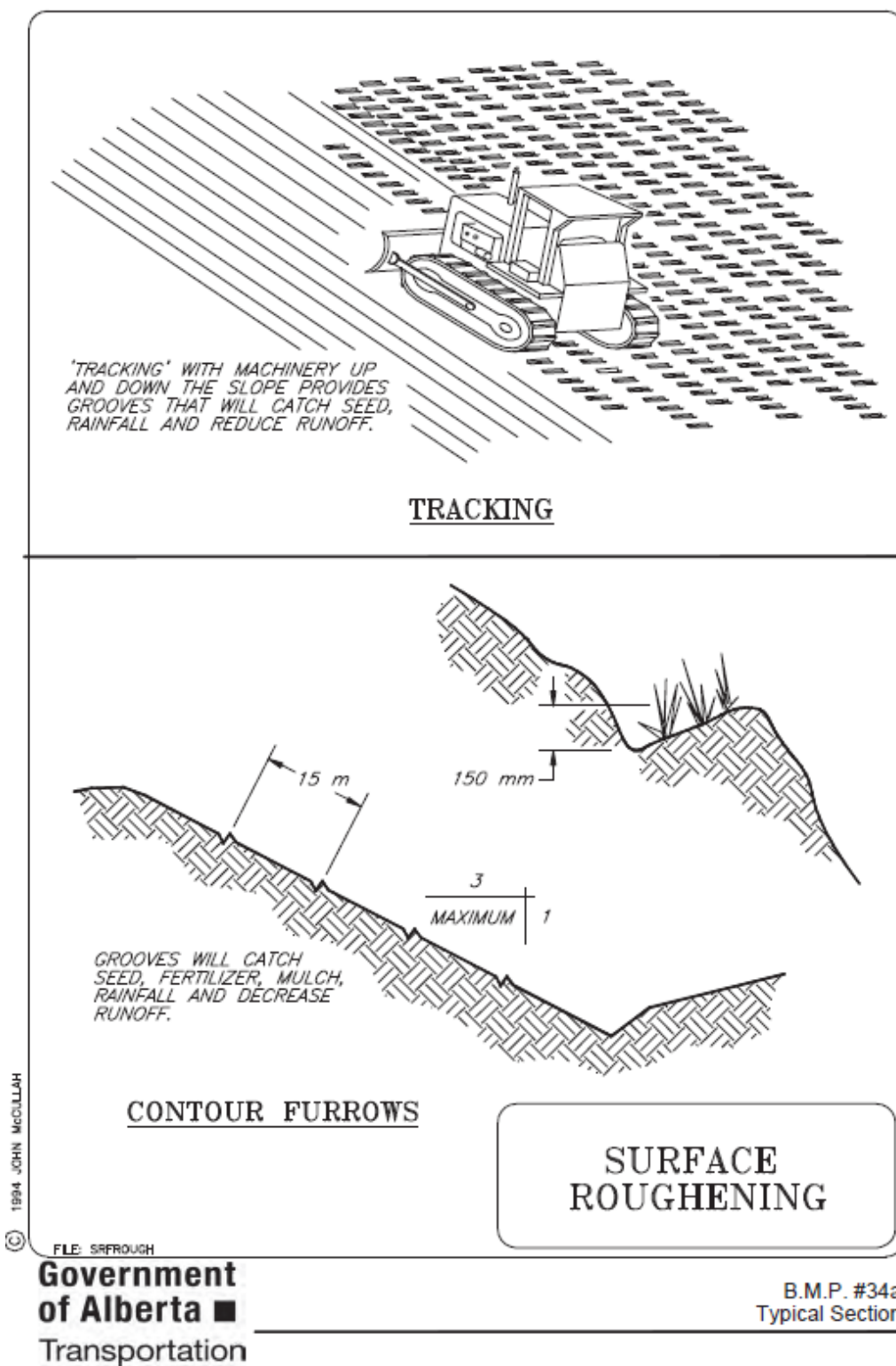


Figure 4-7: Surface Roughening of Slopes by Tracked Equipment

Source: *Field Guide for Erosion and Sediment Control*, Government of Alberta June 2011

4.6 HYDROSEEDING

Hydroseeding is a method used to uniformly broadcast seed, soil amendments (i.e. materials added to improve physical properties of a soil), fibre mulch, and tackifiers, as a hydraulic slurry onto prepared soil. It is a cost-effective way of seeding large slopes that would otherwise not be feasible by hand. When sprayed onto soil, the mixture creates a continuous blanket that protects soils from rain, water, and wind erosion. It can help to accelerate plant growth through the inclusion of fertilizer, and it increases soil moisture retention. Prior to hydroseeding of disturbed areas, the soil should be prepared as outlined in Section 4.5.1. Tackifying agents can be added to hydroseeding mixes for the purpose of binding soils on steep and highly erodible slopes.

4.7 STRAW WATTLE

Straw wattles (aka straw rolls) are fiber filled mesh tubes used as grade breaks to reduce erosion by decreasing the velocity of sheet flow. They can comprise natural fiber/straw rolls, compost socks, or live bundles of vegetation (e.g., willows). To install wattles (Figure 4-8):

- Prepare slopes by track packing (Section 4.5.1) or grading the site;
- Excavate a trench extending one-third the depth of the wattle's diameter;
- Place the wattle in the trench and stake down with wooden posts or live stakes;
- Place the excavated material on the upslope side of the wattle and compact;
- Spacing of the wattles should be approximately 3 to 8 m, but will this depend on the steepness of the slope (i.e., closer together on steeper slopes); and
- Wattles are temporary ESC measures that last approximately two years only and they should be used in conjunction with restoration activities (i.e., seeding, and live staking).

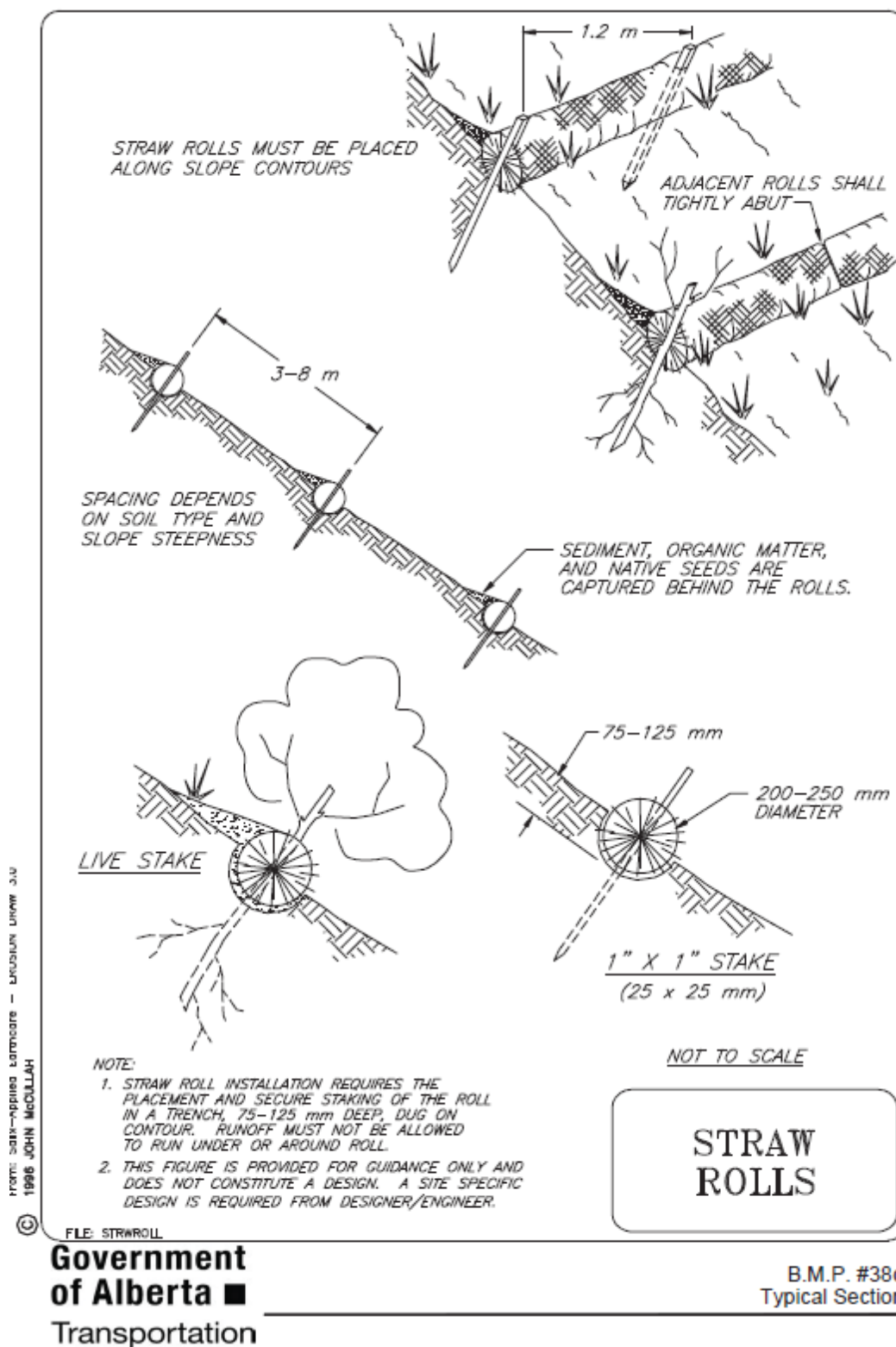


Figure 4-8: Straw Wattle Installation and Spacing

Source: *Field Guide for Erosion and Sediment Control*, Government of Alberta June 2011

4.8 EROSION CONTROL BLANKETS

Erosion control blankets are natural materials such as straw, coconut fiber, or wood fibers between a synthetic or organic fiber netting. They help protect exposed soil from raindrop and sheet erosion. Erosion control blankets help to promote the establishment of vegetation by protecting soil, seeds, and increase moisture retention. To install an erosion control blanket (Figure 4-9):

- Prepare slopes by track packing or grading;
- Hand seed or hydroseed the soil;
- Install erosion control blanket following manufacturer's recommendations, and ensuring they are properly keyed in, flush with the soil, and that the staking/pinning pattern is correct; and
- Inspect them for erosion after storm events.

Erosion control blankets are best used in areas where construction has been finalised and site restoration is the primary goal. They can also be installed in low water flow ditches and channels to protect the channel bottom from erosion.

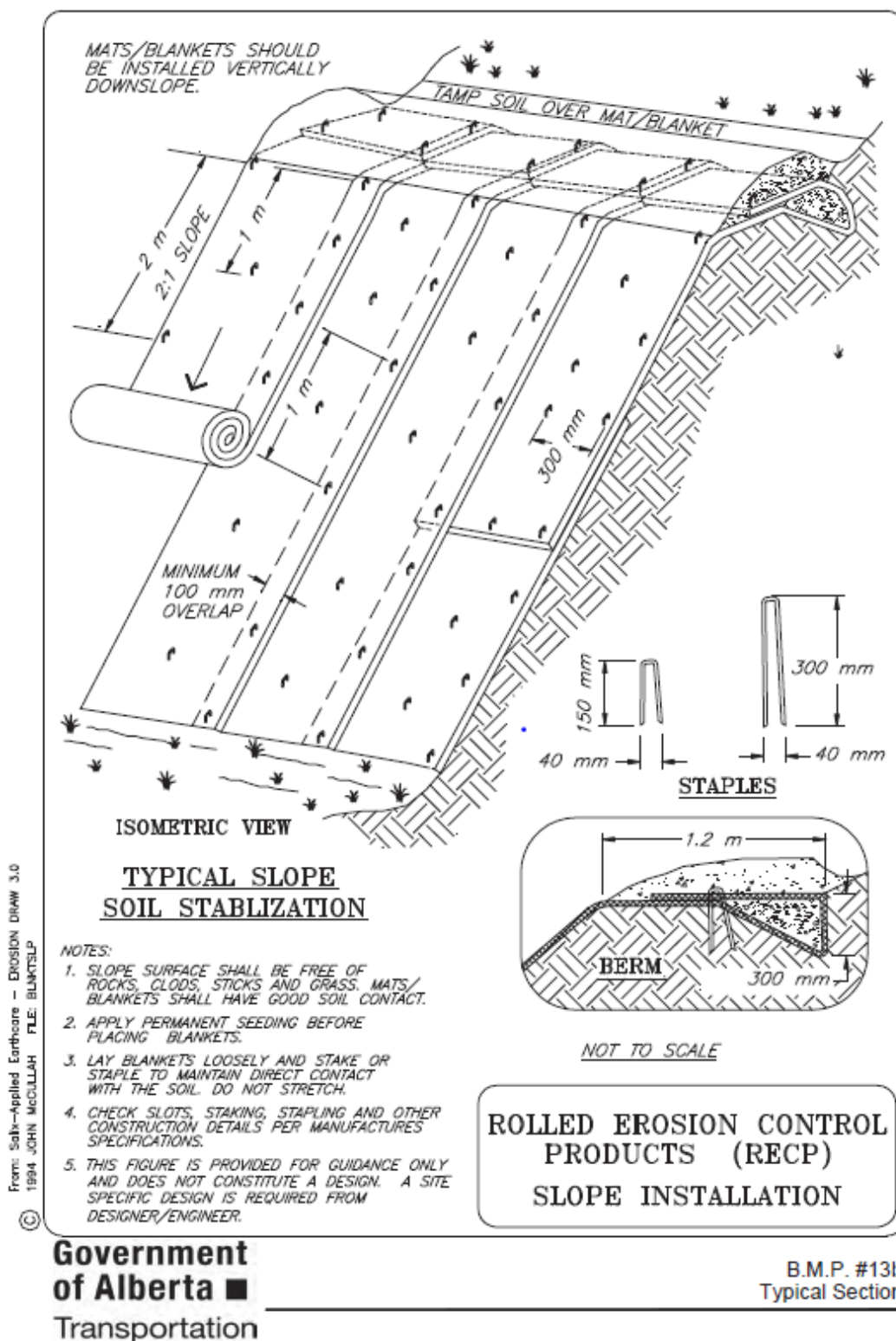


Figure 4-9: Erosion Control Blanket Installation

Source: Field Guide for Erosion and Sediment Control, Government of Alberta June 2011

4.9 MULCHING

Mulches are organic materials spread over exposed soils to protect them from the effects of precipitation and to reduce the velocity of sheet erosion. Like erosion control blankets, mulches can improve plant growth through reducing erosion and improve soil moisture retention. Mulching is most effective on shallow slopes or flat areas after construction is finalised and site restoration is the primary goal. Before mulch is applied soils should be prepared to the final grade, then growth media added and seeded. For the best results mulch should be applied according to the supplier's specifications. The site Environmental Department will inspect sites (where mulch has been applied) after heavy rainfall events to ensure the materials have not been washed away and to monitor revegetation success.

4.10 SHEETING

Sheeting is an emergency and temporary ESC measure used to protect highly erodible slopes or stockpiles prior to a storm event when other measures cannot be installed. Tarpaulins, polyethylene sheets, and other impermeable materials may be used for this purpose. To install:

- Key the sheeting into the top of slope and pull the sheet down over the entire length of the slope;
- Adjacent sheets should be overlapped by a minimum of 0.5 m;
- Use stakes or sand bag chains (e.g., sand bags connected by rope) to anchor the sheeting; and
- Once the storm event has passed remove the sheeting and install permanent ESC measures.

4.11 FILTER BAGS

Filter bags are nonwoven geotextiles used to remove coarse sediments from contact water (note: filter bags do not remove silts or clays). These bags cannot be used passively, and water must be pumped directly into them. Correct use of filter bags includes:

- Placing the bag on a non-erodible surface;
- Inserting the discharge hose of the pump into the filter bag opening and securing it with tie wire, zap straps, or pipe clamps;
- Constant monitoring is required (i.e., pumping into the bag cannot occur over night with no supervision);
- When 50% of the bag is filled with sediment, water should be allowed to drain, and a new bag installed;
- Dispose of the used bag in the proper waste facility; and

- Filter bags should be placed greater than 15 m from a watercourse and in areas where there is insufficient space to install settling ponds or ditches with check dams.

Note: if sediment laden water with high quantities of silt and clay is being pumped into a filter bag, the bag needs to be closely monitored. These fine sediments can clog the fabric pores causing the bag to rupture or the discharge hose to dislodge.

4.12 FLOCCULANTS

Flocculants are benign commercial products used to increase the rate of sedimentation by increasing aggregation of fine sediments. In sediment and erosion control applications, flocculation is achieved with the use of chemical or natural additives (e.g. corn starch, chitosan, guar gum). A flocculant dosing system is typically installed at the inlet to a sedimentation pond which allows the flocculation process to begin immediately upon discharge to the pond. The flocculants accelerate the natural settling process as the sediment laden water flows through the pond, and therefore the required pond detention time is reduced. In addition, flocculants can be added at specific points along the collection ditches to initiate the settling process prior to arrival at the sedimentation pond. This system may be beneficial in steep topographic areas where:

- the calculated surface area for the design particle size is not practical; or
- the clay component is high, as clay soil types have a lower settling velocity than other particles.

If site conditions necessitate the use of flocculants, BMC intends to use only products from the high molecular weight anionic polyacrylamides (or PAMs) group of flocculants, and that are non-toxic to fish to settle sediment in sediment control ponds subject to licence conditions. There is a wide range of anionic PAMs available for water clarification and erosion control. The methods used to identify the flocculants to be used for the Project are described in the Flocculant Use Plan (Appendix A to this Plan).

4.13 EROSION AND SEDIMENT CONTROL FOR DEWATERING

Water and associated sediment encountered during overburden dewatering activities will be initially managed by both a trench and sumps in the area of the proposed open pit. The sumps will be established at the north and south ends of the trench for the purpose of removing water on a continual basis. As water levels are reduced in the overburden by pumping from the sumps, the trench will be further extended to the south along the channel of Geona Creek until it reaches the southern extent of the planned open pit. Water and any associated sediment from the sumps will be pumped to the Pit Rim Pond. The Pit Rim Pond has been designed for a storage capacity of 60,000 m³ (not including freeboard) so as to allow for settling of suspended solids from the pumped water during the construction period. Management of water from dewatering activities is outlined in the Water Management Plan (BMC, 2026c).

Dewatering will be required during construction of other Project infrastructure components. The following mitigation measures should be followed to manage erosion and sedimentation from this activity:

- Pumps will be installed in a sump lined with clean gravel to prevent the unwanted suspension of sediments; and
- Water will be pumped to the Pit Rim Pond or to temporary settling ponds for sediment removal prior to being discharged to receiving environment.

4.14 EROSION AND SEDIMENT CONTROL IN RIPARIAN AREAS

Riparian areas are natural buffers that aid in managing runoff and promote sediment deposition. Strategies to protect aquatic life and riparian habitat that will be implemented during Project construction and operation include:

- Other than at the site of the ABM open pit and construction of water management infrastructure, keeping machines out of, and avoiding work in 15 m of the ordinary high water mark adjacent to non-fish bearing waterbodies and 30 m adjacent to fish bearing waterbodies, where practicable;
- Using existing roads where practicable;
- Establishing lay-down and storage areas at least 15 m from the ordinary high water mark adjacent to non-fish bearing water bodies and 30 m adjacent to fish bearing water bodies, where practicable;
- Locating stockpiles of materials at least 15 m from the ordinary high water mark of any non-fish bearing water body or wetland, and 30 m for fish bearing water bodies, unless otherwise deemed to pose a low risk of sediment entry into any water body;
- Managing equipment production rates (if required) to reduce the amount of sediment generated;
- Preventing deleterious substances and other debris from entering watercourses; and
- Screening pump intakes in accordance with the *Fisheries Act*.

Preservation of riparian vegetation is the ideal mitigation method; however, some construction activities will be required to occur within 30 m of a watercourse. Mitigation measures that will be implemented in riparian areas include, but are not limited to:

- Clearing will be minimized, and the clearance area boundaries will be clearly marked and communicated to construction crews. Where possible, the vegetative mat will be retained, trees will be topped, and their root stocks will be left in place;

- If work is to occur between May 5 and August 21, pre-clearance surveys of songbird nesting sites must be completed prior to any site clearing or construction. Date ranges are ecosystem dependent and will be in accordance with Appendix B (KZK Pre-Disturbance Nesting Sweep – Protocol) of the Wildlife Protection Plan (BMC, 2026f).
- Control measures will be installed in accordance with the site and activity specific Environmental Protection Plans developed by the contractor(s) undertaking the work. The Environmental Protection Plan will be approved by BMC’s Environmental Department prior to commencement of works. Specific mitigation measures will be developed taking the planned works and the specific location into account, and may include:
 - All appropriate ESC measures will be installed prior to the commencement of construction activities;
 - Extra ESC materials and pumps will be on site in the event of an emergency or unplanned event; and
 - Sediment laden water from construction site activities will be pumped to settling areas located away from a watercourse.

4.15 EROSION AND SEDIMENT CONTROL FOR INSTREAM WORKS

Instream works have the potential to negatively affect fish habitat, especially if these works occur during:

- Spawning and egg incubation;
- Movements of fish to or from spawning or overwintering areas; and
- The presence of eggs and newly hatched fry.

Timing works to avoid sensitive life stages is an effective means of mitigating potential adverse effects. Table 4-2 summarizes the Department of Fisheries and Oceans Canada least risk timing windows for arctic grayling, the only fish species observed on the Project.

Table 4-2: Reduced Risk Work Windows for Fish Previously Identified at the Site

Species	Reduced Risk Work Window	
	Start date	Finish date
Arctic Grayling	June 15	April 15

Adapted from: Department of Fisheries and Oceans Canada - Freshwater Timing Windows Identified for The Yukon (<http://www.dfo-mpo.gc.ca/pnw-ppe/timing-periodes/yk-eng.html>, accessed August 12, 2019).

All instream works, in fish streams or tributaries that have a risk of depositing sediment into fish streams, will occur during the least risk timing window (Table 4-2) to negate any potential impacts on spawning success or migration, unless one of the following conditions can be met:

- If the stream channel is dry (no flow) or frozen to the bottom at the worksite and the in-stream activity will not adversely affect fish habitat; or
- Work is in a non-fish bearing stream and measures will be taken to prevent the delivery of sediments into downstream fish habitat or the stream is not fish-bearing and discontinuous with no connection to downstream fish habitat.

Water turbidity will be monitored during all in-stream activities to ensure detection of excessive sedimentation and possible fluid leaks from machinery and equipment that may not be observable to the equipment operator. Monitoring will include visual inspection as well as turbidity monitoring.

Monitoring staff will immediately notify the work supervisor if turbidity readings collected 25 m downstream of the work site exceed of 8 NTU above background at any one time for a duration of 24 hours in all waters during clear flows or in clear waters. An increase of 2 NTU above background at any one time for a duration of 30 days in all water during clear flows or in clear waters. An increase of 8 NTU above background at any time when the background is 8 – 80 NTU during high flows or in turbid waters. A 10% increase when the background is >80 NTU at any time during high flows or in turbid waters. If at any point during instream works, downstream turbidity readings exceed these values, the activity will be halted until turbidity returns to background levels. More detailed adaptive management measures are included in the Adaptive Management Plan.

During the least risk window, the following mitigation measures will be implemented (as required) to prevent the downstream release of sediments:

- Completing water crossings and in-water works in accordance with required authorizations under the Fisheries Act (2019) and DFO Standard Codes of Practise (accessed 2023);
- Isolation of the site is required where activities are carried out instream and when water is present. Alternatively, isolation of the site is not required if the watercourse is dry or frozen to the bottom of the work. If utilized for construction works, isolated areas will be managed as per the following;
 - Maintain 100% of downstream flow at all times.
 - Ensure that water from cofferdams, diversions, or other methods used to divert flows around work areas does not cause erosion or introduce sediment into the channel. To achieve this, no more than 25% of the wetted stream channel width should be blocked at any given time.
 - If cofferdams are constructed and sump pumps are used to maintain dry conditions, back-up pumps with adequate capacity to maintain 100% of seepage must be on site and ready to take over pumping if the main operating pumps fail. The pumps must be continually monitored to ensure the isolated work area does not flood.
 - If diversions are constructed, they will be constructed out of non-erodible materials.

- If water is present and fish are known or suspected to be present, then fish rescue (i.e. salvage) operations will be required immediately after the work area is isolated and during any dewatering process.
- Ensure pump intakes do not disturb the stream bed.
- Pump sediment-laden dewatering discharge well away from the watercourse and allow it to settle and/or filter through sediment bags/socks; the riparian vegetation; or a settling pond before re-entering the watercourse downstream of the work area.
- Pump discharge locations must have an energy dispersing structure to prevent erosion. This structure will be constructed from clean non-erodible and non-Acid Rock Drainage/Metal Leaching material;
- Sediment curtains will be installed for construction activities occurring in still water (i.e., ponds);
- When activities are carried out within wetted areas, ensure that instream disturbance is kept minimal (both in area and duration) to reduce sediment loading into the channel;
- The federal *Fisheries Act* requires that, to prevent entrainment or impingement of fish, all pumps utilized for water withdrawal or to dewater any isolated work area must have their intakes adequately screened to less than 2.54 mm (DFO, 1995);
- Every reasonable effort should be made to minimize the duration of the activities; instream works will be halted during heavy rains;
- Sediment and erosion control measures should be implemented before and maintained during the work activities to prevent sediment from entering the water;
- Disturbance of riparian vegetation should be kept to a minimum. Where removal is unavoidable, use proper clearing and/or vegetation salvage techniques and protect retained vegetation. Disturbed areas should be stabilized, re-vegetated, and/or seeded as soon as possible after the repair or maintenance work, preferably with native species;
- All activities, including maintenance procedures, will be controlled to prevent petroleum products, debris, rubble, concrete, or other deleterious substances from entering the water;
- Vehicular refueling and maintenance will be conducted well away (i.e., more than 100 m) from the water;
- Where practicable, all equipment will be land-based and operated from above the normal highwater mark of any watercourse. All vehicles near to or entering the bed or banks of a watercourse must be clean of soils and any contaminants (e.g., oil and grease);

- All machinery and motorized tools will be located greater than 30 m from the high water mark of all watercourses while not in use; Water pumps will have a drip tray underneath (to collect any fuel or lubricant drips);
- Excavation materials and spoil piles will be placed or disposed of in a manner that prevents their entry into the watercourse;
- Ensure the riprap is clean, free of fine materials, and of sufficient size to resist displacement during peak flood events. If riprap is placed at the original streambank grade, ensure that infilling or narrowing of the watercourse does not impede fish passage;
- No material is to be removed from the stream channel; only material necessary to facilitate the keying-in of armouring may be modified; all activities on the banks should be conducted in a manner that prevents unnecessary removal/disturbance of aquatic organisms in the watercourse; and
- Temporary structures will be removed and the area restored when such structures become redundant, wherever possible.

The goal is to keep clean water clean and only treat small amounts of sediment laden water.

4.16 EROSION AND SEDIMENT CONTROL FOR ROADWAYS

Roadways provide avenues for mobilization and transportation of sediment if drainage into and out of them is not managed appropriately. Measures that will be incorporated to manage sediment and erosion will include:

- Installing water bars to direct road surface runoff away from access and site roads in a safe manner;
- Where required, installing appropriately sized culverts to reduce road failure through erosion and to manage hydrological balance and wetland function; and
- Maintaining ditches along access and site roads, as required, to control surface runoff and sediment transport.

Prior to construction of roadways, site specific measures (i.e. culvert placement design) will be developed to reduce changes in the existing hydraulic balance and downstream wetland functions (where applicable).

5 REFERENCES

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APPENDIX A: FLOCCULANT USE PLAN



KUDZ ZE KAYAH PROJECT

FLOCCULANT USE PLAN

REV 00

February 2024

BMC MINERALS LTD.

This Management Plan has been developed to meet the appropriate subject objectives based on existing regulatory requirements, current or planned site activities, existing and expected site conditions, and designed outcomes at the time of writing. Operational processes/practices for achievement of licence terms and conditions may be updated from time to time as appropriate due to changes to relevant legislation and regulations, changes to site activities or conditions, differences from expected objective outcomes, or improvement of management practices. All rates, capacities, dimensions, weights, volumes and durations in text or figures are based on current feasibility level designs and are subject to change based on final design, licence conditions or site conditions encountered. Updates will be resubmitted to government authorities and/or stakeholders as required.

LIST OF REVISIONS

Issue Date	Revision Number	Description of Revision
February 29, 2024	Rev 00	For Issue to Agencies

LIST OF ACRONYMS

BMC	BMC Minerals Ltd.
PAM	polyacrylamide
SDS	Safety Data Sheet
TSS	Total Suspended Solids

GLOSSARY

Flocculant: an additive used in fluids to increase the rate of sedimentation by increasing aggregation of fine sediments.

Turbidity: the cloudiness or haziness of a fluid caused by large numbers of individual particles that are generally invisible to the naked eye.

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1 INTRODUCTION

This document provides a basic description of a flocculant use plan that will be implemented, if required, at the Kudz Ze Kayah Project. BMC will only use only products from the high molecular weight anionic polyacrylamides (or PAMs) group of flocculants that are non-toxic to fish to settle sediment in water collection ponds or the Pit Rim Pond where Total Suspended Solids (TSS) control is required.

2 IDENTIFICATION AND TESTING OF APPROPRIATE FLOCCULANT(S)

There is a wide range of anionic PAM flocculants available for water clarification however the selection of a specific product is generally informed by site specific soil and water conditions. To ensure that an appropriate product is selected for use on the Project site, a test program will be developed with the earthworks contractor and flocculant suppliers. The testing program will be used to determine the optimal flocculent to meet the discharge criteria for TSS (i.e., maximum monthly mean of 15 mg/L, and a maximum grab sample of 30 mg/L). The test program will specifically be conducted to determine:

- The identification of suitable PAM flocculant products that meet the ANSI/NSF Standard 60 for drinking water treatment and is linear (non-cross-linked or resistant to forming complex polymer chains or bonding between adjacent short polymer chains);
- An identified maximum dosage for the identified product;
- Toxicity testing results for a proposed maximum dosage of the identified PAM product;
- A protocol for determining the appropriate dosage rate, which may often be less than the maximum dosage, for the identified product. The protocol will be based on monitoring data (i.e., flow rate, TSS, turbidity) collected routinely and periodically (i.e., likely several times a day during initial establishment to daily once established) at water collection ponds and the Pit Rim Pond.
- The Scope of the testing program that will be implemented is described in Section 2.1.

Once the test program has been completed, and a suitable PAM flocculant(s) has been determined, a design will be prepared for dosing the flocculant(s) into the feed water going into the various water collection ponds and the Pit Rim Pond. Safety Data Sheets (SDSs) will be submitted with the design once the PAM products have been identified and tested for performance. Appendix A provides the SDS for examples of anionic PAM products that may be used to reduce sediment loads in contact water on the Project site.

2.1 SCOPE OF REQUIRED TESTING FOR FLOCCULANT DETERMINATION

Initial testing will be conducted by a selected Flocculant vendor, or third party testing service. The testing will be a standard Laboratory Jar test. The following guidelines will be followed

- Test a minimum of 3 separate polymers covering the tester's recommended polymer formulations for the raw water. The candidate polymers should include as many permutations as practical for the following general polymer characteristics.
- A minimum of five different levels of turbidity will be conducted with equal spacing between 15 mg/L and 1,000 mg/L.
- The Jar tests will be conducted for each product at different dosages with the tests run side-by-side, and the results compared to an untreated jar. A minimum of 10 different doses will be conducted for each product.

3 OPERATIONAL PLAN FOR FLOCCULANT SYSTEM

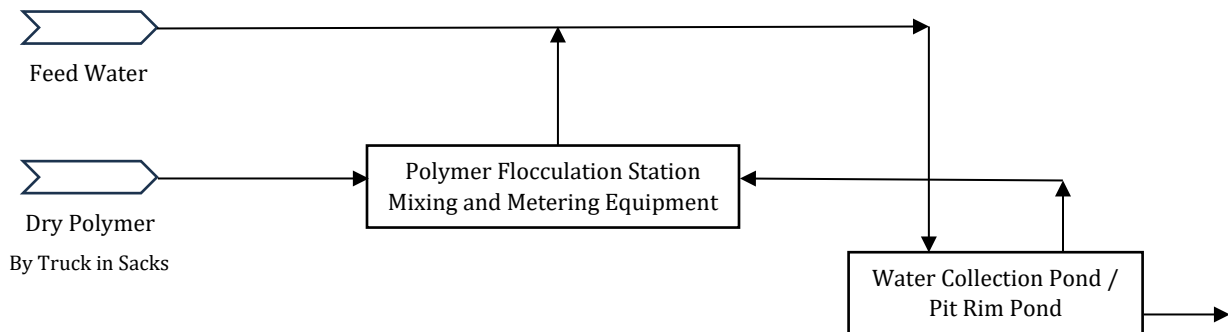
Should flocculants be required on site to manage elevated TSS concentrations to meet site water quality objectives and MDMER, a flocculation system as shown in Figure 3-1 will be used. This concept is summarized as follows:

- A centralized flocculation station will prepare a polymer solution from dry polymer powder for inline injection into the feed water into the water collection pond or Pit Rim Pond where TSS control is required. The maximum batching capacity is expected to be determined during testing;
- The flocculation station and batching and storage tanks will have secondary containment for the expected working volumes of stored liquid;
- It is anticipated that the flocculant storage, station, batching and storage tanks will be assembled into a 40' x 8' Sea container converted into mix plant for this application. The plant (if required) will be adjacent to the water collection pond or Pit Rim Pond requiring flocculant dosing;
- Make-up water for the polymer is expected to be drawn from the water collection pond or Pit Rim Pond requiring flocculant dosing. In the event that the water level in the relevant pond is insufficient for this purpose, make-up water will be drawn from either a water tank or a nearby water collection pond;
- Protocols for determining the appropriate dosing rates will be prepared from the original testing based on the chosen product. The protocols will be reviewed once in operation to determine the effectiveness and make adjustments to dosing;
- The flocculation system will be complete with metering and controls for the mixing and pumping to injection locations; and
- The dry polymer will be shipped to site in 1.0 m³ super sacks and will be stored indoors.

A standard operating procedure will be developed for the efficient, effective, and controlled addition of the flocculant. The procedure will include, at a minimum, the following:

- Monitoring Requirements (frequency and locations for TSS, turbidity and flow rate);
- Monitoring Methods (sampling and analyses);
- Polymer Handling, Storage and Maintenance;
- Batch Plant Operations and Maintenance (includes make-up water system);
- Periodic Performance Testing to ensure appropriate dosing and uses of identified flocculants; and
- Reporting Protocols and Requirements (for each of the above procedures).

Figure 3-1: Block Flow Diagram of Flocculation Concept



4 REFERENCES

American National Standards Institute. 2021. *ANSI/NSF Standard 60. Drinking Water Treatment Chemicals - Health Effects*.

APPENDIX A: PAM SAFETY DATA SHEET

1. IDENTIFICATION**Product information****Product name****SUPERFLOC A-100HMW**

Other means of identification: Anionic Polyacrylamide.

Recommended use of the chemical and restrictions on use**Use of the Substance/Mixture**

Water treatment chemical

Recommended restrictions on use

-

Supplier's details

Kemira Chemicals Canada Inc.
321 Welland Ave,
L2R 2R2 St. Catharines CANADA
Telephone+19056886470, Telefax. +19056884666

HEAD OFFICE
Kemira Oyj
P.O. Box 330
00101 HELSINKI
FINLAND
Telephone +358108611 Telefax +358108621124

Emergency telephone number

CHEMTREC (24 Hours): 1-800-424-9300

2. HAZARDS IDENTIFICATION**GHS Classification**

The product is not considered hazardous by the 2015 WHMIS Hazardous Product Regulations.,

GHS-Labeling

The product is not considered hazardous by the 2015 WHMIS Hazardous Product Regulations.

Other hazards which do not result in classification

Advice; Forms slippery/greasy layers with water.

Potential environmental effects; This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances /Mixtures: Mixture

Not a hazardous substance or mixture according to the Globally Harmonised System (GHS).

4. FIRST AID MEASURES**Description of first aid measures****General advice**

Show this safety data sheet to the doctor in attendance.

Inhalation

Move to fresh air. If there is difficulty in breathing, medical advice is required.

Skin contact

Wash off with soap and water.

Eye contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Ingestion

Rinse mouth with water. Drink 1 or 2 glasses of water. Do NOT induce vomiting. Consult a physician.

Most important symptoms and effects, both acute and delayed

Symptoms : No information available.

Hazards : No information available.

Indication of immediate medical attention and special treatment needed, if necessary

Treatment : No information available.

5. FIREFIGHTING MEASURES

Suitable extinguishing media

Water spray

Water mist

Carbon dioxide (CO₂)

Dry chemical

Unsuitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Special hazards arising from the substance or mixture

Dust may form explosive mixture in air.

Special protective actions for fire-fighters

Wear self-contained breathing apparatus and protective suit.

Further information

Forms slippery/greasy layers with water.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

For personal protection see section 8.

Environmental precautions

Prevent product from entering drains.

Methods and materials for containment and cleaning up

Product becomes slippery when it is wet. Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water.

Additional advice

Spilling onto the container's outside will make container slippery.

7. HANDLING AND STORAGE

Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice. Avoid dust formation during handling. The product is hygroscopic. Protect from moisture. For personal protection see section 8.

Conditions for safe storage, including any incompatibilities

The product is hygroscopic. Protect from moisture.

Materials for packaging

Unsuitable material: To avoid product degradation and equipment corrosion, do not use iron, copper or aluminium containers or equipment.

Materials to avoid:

Strong oxidizing agents

Storage stability:

Storage temperature 4 - 32 °C

Other data Stable under recommended storage conditions.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

Contains no substances with occupational exposure limit values.

Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and immediately after handling the product. Avoid contact with skin and eyes. Ensure that eyewash stations and safety showers are close to the workstation location.
Ensure adequate ventilation.

Individual protection measures, such as personal protective equipment

Handle in accordance with good industrial hygiene and safety practice.

Respiratory protection

When there is potential for airborne exposures in excess of applicable limits, wear NIOSH/MSHA

approved respiratory protection.

Hand protection

Glove material: Impervious gloves, Permeability tests are not available for this product. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

Skin and body protection

Protective clothing.

Eye protection

Safety goggles

Environmental exposure controls

No data available

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state, Form	: granular
Appearance	: solid
Colour	: off-white
Odour	: odourless
Odour Threshold	: No data available
pH	: 5 - 7 Aqueous solution (0,5 % solution)
Melting point/range	: not determined
Initial boiling point and boiling range	: Not applicable
Flash point	: Not applicable
Evaporation rate	: No data available

Flammability (solid, gas)	:	
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapour pressure	:	Not applicable
Relative vapour density	:	No data available
Relative density	:	No data available
Density	:	0.75 - 0.95 g/cm ³
Bulk density	:	650 - 850 kg/m ³
Solubility(ies)	:	
Water solubility	:	Limited by viscosity.
Partition coefficient: n-octanol/water	:	Not applicable
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity	:	
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	No data available
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.
Surface tension	:	Not applicable

10. STABILITY AND REACTIVITY

Reactivity

No decomposition if stored and applied as directed.

Chemical stability

The product is chemically stable.

Possibility of hazardous reactions

Hazardous polymerisation does not occur.

Conditions to avoid

Protect from moisture.

Incompatible materials

Strong oxidizing agents

Hazardous decomposition products

Ammonia
Carbon oxides (COx)
oxides of nitrogen

Thermal decomposition:

Note: No data available

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute oral toxicity

Conclusion: The acute toxicological results displayed may not be the results of actual testing of this material but based on a similar tested material.

LD50/Rat/>/5,000 mg/kg

Conclusion: The data is based on the toxicological properties of individual components of the product.

Acute inhalation toxicity

LC50/Rat/4 h

Conclusion: No data available

Acute dermal toxicity

LD50/Rabbit/>/10,000 mg/kg

Skin corrosion/irritation

Conclusion: No skin irritation

Serious eye damage/eye irritation

Conclusion: No eye irritation

Respiratory or skin sensitisation

Skin sensitisation

Conclusion: Not sensitizing.

Germ cell mutagenicity

Genotoxicity in vivo

Conclusion: Based on available data, the classification criteria are not met.

Carcinogenicity

Carcinogenicity

Based on available data, the classification criteria are not met.

Reproductive toxicity

Toxicity for reproduction

Conclusion: Based on available data, the classification criteria are not met.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Aquatic toxicity

Remarks: Ecotoxicological information provided is based on a structurally or compositionally similar product.

LC50/96 h/Lepomis macrochirus (bluegill sunfish)/OECD Test Guideline 203: > 100 mg/l

LC50/96 h/Oncorhynchus mykiss (rainbow trout)/OECD Test Guideline 203: > 100 mg/l

EC50/48 h/Daphnia magna (Water flea)/OECD Test Guideline 202: > 100 mg/l

IC50/72 h/Pseudokirchneriella subcapitata (green algae)/OECD Test Guideline 201: > 100 mg/l

Toxicity to other organisms

Remarks: No data available

Persistence and degradability

Biological degradability:

Remarks: Ecotoxicological information provided is based on a structurally or compositionally similar product.

CO2 Evolution Test/OECD Test Guideline 301B/28 d: < 70 %

Not readily biodegradable.

Bioaccumulative potential

Partition coefficient: n-octanol/water: Not applicable
Mobility in soil

Water solubility: Limited by viscosity.

Other adverse effects

No data available

Additional ecological information: Ecotoxicological information provided is based on a structurally or compositionally similar product. This material is not classified as dangerous for the environment. The effects on aquatic organisms are due to an external (non-systemic) mode of action and are significantly reduced (by a factor of 7-20) within 30 minutes due to the binding of the product to dissolved organic carbon and inorganic sorbents such as clays and silts.

13. DISPOSAL CONSIDERATIONS

Product	Recycling, recovery and reuse of materials is recommended if permitted by regulations.If recycling is not practicable, dispose of in compliance with local regulations.Incineration is recommended.
Contaminated packaging	Packages that cannot be cleaned must be disposed of the same way as the unused product.

14. TRANSPORT INFORMATION

Land transport

Not classified as dangerous in the meaning of transport regulations.

Sea transport

Not classified as dangerous in the meaning of transport regulations.

Air transport

Not classified as dangerous in the meaning of transport regulations.

Special precautions for user

No data available

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

Notification status

USA	:	All components of this product are included in the United States TSCA Chemical Inventory or are not required to be listed on the United States TSCA Chemical Inventory.
European Union	:	All components of this product are included in the European Inventory of Existing Chemical Substances (EINECS) or are not required to be listed on EINECS.
	:	
Canada	:	All components of this product are included in the Canada Domestic Substance List (DSL) or are not required to be listed on the Canada Domestic Substance List (DSL).
Japan	:	All components of this product are included on the Japanese (ENCS) inventory or are not required to be listed on the Japanese (ENCS) inventory.
Australia	:	All components of this product are included in the Australian Inventory of Chemical Substances (AICS) or are not required to be listed on the Australian Inventory of Chemical Substances (AICS).
South Korea	:	All components of this product are included in the Korean (ECL) inventory or are not required to be listed on the Korean (ECL) inventory.
Philippines	:	All components of this product are included on the Philippine (PICCS) inventory or are not required to be listed on the Philippine (PICCS) inventory.
China	:	All components of this product are included on the Chinese inventory or are not required to be listed on the Chinese inventory.
Taiwan	:	All components of this product are included on the Taiwan Toxic Chemical Substances Control Act Inventory.
New Zealand	:	All components of this product are included in the New Zealand inventory (NZIoC) or are not required to be listed on the New Zealand inventory(NZIoC).

16. OTHER INFORMATION**HMIS Rating**

Health: 0

Flammability: 1

Reactivity: 0

NFPA Rating

Health: 0

Fire: 1

Reactivity: 0

Training advice

Read the safety data sheet before using the product.

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Sources of key data used to compile the Safety Data Sheet

Regulations, databases, literature, own tests.

Additions, Deletions, Revisions

Relevant changes have been marked with vertical lines.

Revision Date: 05/06/2020

1. IDENTIFICATION**Product information****Product name****SUPERFLOC A-130HMW**

Other means of identification: Anionic Polyacrylamide.

Recommended use of the chemical and restrictions on use**Use of the Substance/Mixture**

Water treatment chemical

Recommended restrictions on use

Do not use for other purposes than the identified uses.

Supplier's details

Kemira Chemicals Canada Inc.
321 Welland Ave,
L2R 2R2 St. Catharines CANADA
Telephone+19056886470, Telefax. +19056884666
us-customerservice@kemira.com

Emergency telephone number

CHEMTREC (24 Hours): 1-800-424-9300

2. HAZARDS IDENTIFICATION**GHS Classification**

The product is not considered hazardous by the 2015 WHMIS Hazardous Product Regulations.,

GHS-Labeling

The product is not considered hazardous by the 2015 WHMIS Hazardous Product Regulations.

Other hazards which do not result in classification

Advice; Forms slippery/greasy layers with water.

Potential environmental effects; This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances /Mixtures: Mixture

Contains no hazardous ingredients according to GHS

4. FIRST AID MEASURES

Description of first aid measures

General advice

For personal protection see section 8.

Inhalation

No hazards which require special first aid measures. Remove to fresh air.

Skin contact

Wash off with soap and water.

Eye contact

Rinse thoroughly with plenty of water, also under the eyelids. If possible use lukewarm water.

Ingestion

Rinse mouth with water. Call a physician if symptoms occur. Do NOT induce vomiting. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

Symptoms : No information available.

Hazards : No information available.

Indication of immediate medical attention and special treatment needed, if necessary

Treatment : Symptomatic treatment.

5. FIREFIGHTING MEASURES

Suitable extinguishing media

Water spray

Carbon dioxide (CO₂)

Dry chemical

Unsuitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Special hazards arising from the substance or mixture

Dust may form explosive mixture in air.

Special protective actions for fire-fighters

Wear self-contained breathing apparatus and protective suit.

Use NIOSH/MSHA approved respiratory protection.

Further information

In the event of fire, cool tanks with water spray.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

For personal protection see section 8.

Environmental precautions

Should not be released into the environment.

Methods and materials for containment and cleaning up

Product becomes slippery when it is wet. Take up mechanically and collect into suitable containers for disposal. After cleaning, flush away traces with water.

Additional advice

For personal protection see section 8.

7. HANDLING AND STORAGE

Precautions for safe handling

Avoid dust formation during handling. For personal protection see section 8.

Conditions for safe storage, including any incompatibilities

Store in original container.

Materials for packaging

Unsuitable material: To avoid product degradation and equipment corrosion, do not use iron, copper or aluminium containers or equipment.

Materials to avoid:

Strong oxidizing agents

Storage stability:

Storage temperature 40 - 90 °F

Other data Reason:
integrity

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

Contains no substances with occupational exposure limit values.

Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes and clothing. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation.

Individual protection measures, such as personal protective equipment

Handle in accordance with good industrial hygiene and safety practice.

Respiratory protection

When there is potential for airborne exposures in excess of applicable limits, wear NIOSH/MSHA approved respiratory protection.

Hand protection

Glove material: Impervious gloves, Permeability tests are not available for this product. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

Skin and body protection

Protective clothing.

Eye protection

Safety goggles

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state, Form	: granular
Appearance	: solid
Colour	: white
Odour	: odourless
Odour Threshold	: Not applicable
pH	: 7 - 9 Concentration: 0.5 % (as aqueous solution)
Melting point/freezing point	: not determined
Initial boiling point and boiling range	: Not applicable
Flash point	: Not applicable
Evaporation rate	: No data available
Flammability (solid, gas)	: Not flammable
Self-ignition	: No data available

Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapour pressure	:	Not applicable
Relative vapour density	:	No data available
Relative density	:	No data available
Density	:	No data available
Bulk density	:	650 - 850 kg/m ³
Solubility(ies)	:	
Water solubility	:	Limited by viscosity.
Partition coefficient: n-octanol/water	:	Not applicable
Auto-ignition temperature	:	> 150 °C
Decomposition temperature	:	> 150 °C
Viscosity	:	
Viscosity, dynamic	:	Not applicable
Viscosity, kinematic	:	No data available
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.
Surface tension	:	Not applicable

10. STABILITY AND REACTIVITY

Reactivity

No data available

Chemical stability

Stable under normal conditions.

Possibility of hazardous reactions

Hazardous polymerisation does not occur.

Conditions to avoid

Material is stable under normal conditions.

Incompatible materials

Strong oxidizing agents

Hazardous decomposition products

Ammonia
Carbon dioxide (CO₂)
Carbon monoxide (CO)
Nitrogen oxides (NO_x)

Thermal decomposition: > 150 °C

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute oral toxicity

Conclusion: The following toxicological data shown are those obtained from tests on products of similar composition.

LD50/Rat/> 5,000 mg/kg

Acute inhalation toxicity

LC50/Rat/4 h/> 20 mg/lRemarks: estimated

Acute dermal toxicity

LD50/Rabbit/> 2,000 mg/kg

Skin corrosion/irritation

Conclusion: No skin irritation

Serious eye damage/eye irritation

Conclusion: No eye irritation

Respiratory or skin sensitisation

Skin sensitisation

Conclusion: Not sensitizing.

Germ cell mutagenicity

Genotoxicity in vivo

Conclusion: Based on available data, the classification criteria are not met.

Carcinogenicity

Carcinogenicity

Based on available data, the classification criteria are not met.

Reproductive toxicity

Toxicity for reproduction

Conclusion: Based on available data, the classification criteria are not met.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Aquatic toxicity

LC50/96 h/Branchydanio rerio (zebra fish)/Acute toxicity/OECD Test Guideline 203: > 100 mg/l
Remarks: fresh water

Remarks: Ecotoxicological information provided is based on a structurally or compositionally similar product.

EC50/48 h/Daphnia magna (Water flea)/Immobilization/OECD Test Guideline 202: > 100 mg/l

IC50/72 h/Selenastrum capricornutum (green algae)/Growth inhibition/OECD Test Guideline 201: > 100 mg/l

Toxicity to other organisms

No data available

Persistence and degradability

Biological degradability:

CO2 Evolution Test/OECD Test Guideline 301B/28 d: < 70 %

The polymeric ingredient is not readily biodegradable, but degradable by hydrolysis.

Bioaccumulative potential

Partition coefficient: n-octanol/water: Not applicable

Mobility in soil

Water solubility: Limited by viscosity.

Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS

Product	Recycling, recovery and reuse of materials is recommended if permitted by regulations.If recycling is not practicable, dispose of in compliance with local regulations.
Contaminated packaging	If recycling is not practicable, dispose of in compliance with local regulations.

14. TRANSPORT INFORMATION

Land transport

Not classified as dangerous in the meaning of transport regulations.

Sea transport

Not classified as dangerous in the meaning of transport regulations.

Air transport

Not classified as dangerous in the meaning of transport regulations.

Special precautions for user

No data available

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

Notification status

USA	: All components of this product are included in the United States TSCA Chemical Inventory or are not required to be listed on the United States TSCA Chemical Inventory.
Canada	: All components of this product are included in the Canada Domestic Substance List (DSL) or are not required to be listed on the Canada Domestic Substance List (DSL).
European Union	: All components of this product are included in the European Inventory of Existing Chemical Substances (EINECS) or are not required to be listed on EINECS.
Australia	: All components of this product are included in the Australian Inventory of Chemical Substances (AICS) or are not required to be listed on the Australian Inventory of Chemical Substances (AICS).
China	: All components of this product are included on the Chinese inventory or are not required to be listed on the Chinese inventory.
Japan	: All components of this product are included on the Japanese (ENCS) inventory or are not required to be listed on the Japanese (ENCS) inventory.
South Korea	: All components of this product are included in the Korean (ECL) inventory or are not required to be listed on the Korean (ECL) inventory.
Philippines	: All components of this product are included on the Philippine (PICCS) inventory or are not required to be listed on the Philippine (PICCS) inventory.
New Zealand	: All components of this product are included in the New Zealand inventory (NZIoC) or are not required to be listed on the New Zealand inventory (NZIoC).
Taiwan	: All components of this product are included on the Taiwan Toxic Chemical Substances Control Act Inventory.

16. OTHER INFORMATION

HMIS Rating

Health: 0

Flammability: 1

Reactivity: 0

NFPA Rating

Health: 0

Fire: 1

Reactivity: 0

Training advice

Read the safety data sheet before using the product.

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

This Safety Data Sheet is prepared according to the Canadian WHMIS Hazard Communication Standard (WHMIS 2015), an adoption of the UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS), Revision 5.

Sources of key data used to compile the Safety Data Sheet

Regulations, databases, literature, own tests.

Additions, Deletions, Revisions

Relevant changes have been marked with vertical lines.

Revision Date: 05/28/2020

APPENDIX B: TABLE OF CONCORDANCE

Reference No.	Proponent Commitment	Where addressed
Project Proposal Section 18.2	The conceptual management plan (presented in the Project Proposal) outlines mitigation measures to minimize potential effects to Surface Water and Aquatic Ecosystems and Resources from Project activities	Sediment and Erosion Control Plan
Project Proposal Chapter 10	Adhere to instream construction timing windows (instream construction will be avoided, when practicable, during grayling spawning and incubation period mid-May to late June). Note time period has been revised to April 15 to June 15 in accordance with DFO guidance.	Section 4.15 of Sediment and Erosion Control Plan
Project Proposal Chapter 10	Geochemical control of construction materials for in-stream works.	Section 4.15 of Sediment and Erosion Control Plan
Project Proposal Chapter 18	BMC will protect aquatic and riparian habitat by: - o Other than at the site of the ABM open pit and construction of water management infrastructure, keeping machines out of, and avoiding work in 15 m of the ordinary high water mark adjacent to non-fish bearing waterbodies and 30 m adjacent to fish bearing waterbodies, where practicable; - o Using existing roads where practicable; - o Establishing lay-down and storage areas at least 15 m from the ordinary high water mark adjacent to non-fish bearing water bodies and 30 m adjacent to fish bearing water bodies, where practicable; - o Preventing deleterious substances and other debris from entering watercourses; and - o Screening pump intakes in accordance with the Fisheries Act.	Section 4.14 of Sediment and Erosion Control Plan
Project Proposal Chapter 18	Specific mitigation measures BMC will adhere to during any in-water works will include: - o Avoiding in-stream construction in fish-bearing watercourses whenever practicable, and respecting the work timing windows described in Fish Offsetting Plan when avoidance is not practicable; - o Completing water crossings and in-water works in accordance with approvals and permits; - o Diverting streams and isolating work activities wherever practicable; - o Installing water diversion pump intakes in a manner that prevents entrainment of sediments; - o Installing water diversion discharge points in a manner that prevents erosion of the downstream substrates; and - o Removing temporary structures and restoring the area when such structures become redundant, wherever possible.	Section 4.15 of Sediment and Erosion Control Plan
Project Proposal Chapter 11 Response Report #1	Several approaches will be used to mitigate potential effects of the Project on terrain stability. Many of them are related to mine design to help eliminate risks and include approaches such as: o Planning of progressive reclamation to help ensure slope stability.	Section 4.5 of Sediment and Erosion Control Plan

Reference No.	Proponent Commitment	Where addressed
BMC Response on Draft Screening Report	Construction and operational approaches may also include: o Identification of temporary run-off and erosion controls for construction (such as run-off collection channels, settlement ponds, and sediment control devices such as silt fences).	Chapter 4 of Sediment and Erosion Control Plan
Project Proposal Chapter 11	Procedures in the Sediment and Erosion Control Plan (Section 18.6 of the Project Proposal) will aid in terrain stability.	Sediment and Erosion Control Plan
Project Proposal Chapter 11	Reclamation methods that reduce equipment traffic during soil redistribution and placement will be utilized to lessen compaction of soil in stockpiles and reclaimed areas. For example, where practicable, instead of a dozer, a backhoe will be used to distribute topsoil cover in the reclaimed areas. Ripping will be used in areas where surficial soils are excessively compacted.	Section 4.5.1 of Sediment and Erosion Control Plan
Project Proposal Chapter 11	During salvage operations, mitigation against soil degradation by having multiple topsoil storage areas, will focus on minimizing the number of times the soil is moved, reducing vehicle traffic over the stockpile surface, and avoiding handling soils when they are too dry or too wet.	Section 4.5 of Sediment and Erosion Control Plan
Project Proposal Chapter 11	Reduction of topsoil stockpile erosion will be accomplished by covering topsoil stockpiles with plastic sheeting or tarps, or establishing vegetative cover, to prevent erosion (as per the Sediment and Erosion Control Plan) (Section 18.6 of the Project Proposal).	Section 4.5 of Sediment and Erosion Control Plan
Project Proposal Chapter 11 (BMC, 2017a)	Minimize land clearing to the areas necessary for Project Footprint.	Chapter 1 of Sediment and Erosion Control Plan
Project Proposal Chapter 18	Sediment control measures will be as follows: - o Control runoff and manage stormwater (e.g., rainfall or snow melt) and direct it away from construction areas where excavation, soil placement, and staging activities occur; - o Develop site-specific measures to reduce changes to the existing hydraulic balance and downstream wetland functions (if applicable), prior to construction of the Project access and site roads; - o Silt fences, berms, swales, ditches, check dams, settling ponds, and other sediment and erosion control facilities will be installed prior to construction at site-specific locations, as required; and - o Contingency supplies of sediment and erosion control materials will be maintained, and workers will be sufficiently trained in their appropriate installation and maintenance.	Chapter 4 of Sediment and Erosion Control Plan Section 4.16 of Sediment and Erosion Control Plan Chapter 4 of Sediment and Erosion Control Plan Section 1.1 of Sediment and Erosion Control Plan
Project Proposal Chapter 18	Sediment and erosion control measures will be: - o Inspected regularly at a frequency commensurate with the risk, nature, location, and seasonality of the work; - o Adapted or revised, as appropriate;	Chapter 4 of Sediment and Erosion Control Plan Chapter 4 of Sediment and Erosion Control Plan

Reference No.	Proponent Commitment	Where addressed
	- o Repaired as necessary in a timely manner, commensurate with the risk, nature, location, and seasonality of the work; - o Maintained until construction is completed and the affected areas are sufficiently stabilized and revegetated so there is minimal risk of erosion or sedimentation at the site as a result of construction activities; - o Storage and disposal of construction wastes, overburden, soil, or other substances in such a manner as to reduce the potential for entry into any streams or watercourses;	Chapter 4 of Sediment and Erosion Control Plan Chapter 4 of Sediment and Erosion Control Plan Section 4.2 of Sediment and Erosion Control Plan
	- o Stockpiles of materials will be located at least 15 m from the ordinary high water mark of any non-fish bearing water body or wetland, and 30 m for fish bearing water bodies, unless otherwise deemed to pose a low risk of sediment entry into any water body; - o Cover stockpiles of erodible materials such as soil with plastic sheeting or tarps, or establish vegetative cover, to prevent erosion; - o Manage equipment production rates (if required) to reduce the amount of sediment generated; - o Isolate in-stream work areas from flowing water to prevent sediment from entering the downstream environment; and - o Use clean rock materials for riprap construction to reduce the amount of sediment that is introduced into the aquatic environment.	Section 4.14 of Sediment and Erosion Control Plan Section 4.10 of Sediment and Erosion Control Plan Section 4.14 of Sediment and Erosion Control Plan Section 4.15 of Sediment and Erosion Control Plan Section 4.15 of Sediment and Erosion Control Plan
Project Proposal Chapter 18	Erosion control measures are as follows: - o Control site runoff by ditching, grading, sedimentation ponds, check dams, or effective alternatives; - o Stabilize slopes by maintaining ground cover or using materials such as geotextiles/erosion control cloth; - o Manage vegetation and soil stripping, taking into consideration slope stability and the proximity to sensitive habitats such as wetlands or fish habitat, maintaining 30 m riparian buffers adjacent to fish bearing waterbodies and 15 m riparian buffers adjacent to non-fish bearing waterbodies, where practicable; - o Identify natural drainages that occur in cleared areas and incorporate appropriate sediment and erosion control measures into site planning; - o Incorporate perimeter channels, as required, to catch and transport site runoff from new construction sites and equipment staging areas; - o Install water bars to direct road surface runoff away from access and site roads in a safe manner; - o Where required, install appropriately sized culverts to reduce road failure through erosion and to manage hydrological balance and wetland function; - o Maintain ditches along access and site roads, as required, to control surface runoff and sediment transport;	Chapter 4 of Sediment and Erosion Control Plan Chapter 4 of Sediment and Erosion Control Plan Section 4.14 and 4.15 of Sediment and Erosion Control Plan Chapter 1 of Sediment and Erosion Control Plan Section 4.1 of Sediment and Erosion Control Plan Section 4.16 of Sediment and Erosion Control Plan Section 4.16 of Sediment and Erosion Control Plan Section 4.16 of Sediment and Erosion Control Plan

Reference No.	Proponent Commitment	Where addressed
	- o Operate machinery on land above the high water mark in a manner that reduces disturbance to the banks of watercourses; - o Remove sediment control measures, such as plastic sheeting and silt fencing, when no longer required; - o Salvage and stockpile clean surface soils for site restoration; - o Establish and maintain vegetative cover on the soils stockpiled to prevent erosion; and - o Restore disturbed areas to a stable vegetated condition as soon as possible.	Section 4.14 and 4.15 of Sediment and Erosion Control Plan Chapter 1 of Sediment and Erosion Control Plan Section 4.5 of Sediment and Erosion Control Plan Section 4.5 of Sediment and Erosion Control Plan Section 4.5 of Sediment and Erosion Control Plan
Project Proposal Chapter 18	The general measures BMC will use to minimize suspended sediment generation due to surface erosion from overland surface water runoff include: o Avoiding work where possible, in 15 m of the ordinary high water mark of non-fish bearing watercourses, and 30 m from fish bearing watercourses;	Section 4.14 and 4.15 of Sediment and Erosion Control Plan
	- o Using existing roads where practicable; - o Establishing lay-down and storage areas at least 15 m from the ordinary high water mark of non-fish bearing watercourses, and 30 m from fish bearing watercourses; - o Using clean riprap and construction materials; - o Diverting runoff around disturbed work areas and collecting runoff in sediment ponds for settling and testing prior to discharge to the downstream environment; - o Using erosion-resistant cover material including compacted granular material on steeper slopes in ditches to increase resistance to erosion; - o Vegetating exposed surfaces where possible to provide long-term erosion resistance in accordance with the Reclamation and Closure Plan; - o Vegetating and/or installing erosion control matting on disturbed areas, where possible; and - o Installing and maintaining silt fencing and sediment control structures (e.g., straw wattles) to minimize sediment transport.	Section 4.14 of Sediment and Erosion Control Plan Section 4.14 of Sediment and Erosion Control Plan Section 4.15 of Sediment and Erosion Control Plan Section 4.1 and 4.2 of Sediment and Erosion Control Plan Section 4.1 of Sediment and Erosion Control Plan Section 4.5 of Sediment and Erosion Control Plan Chapter 4 of Sediment and Erosion Control Plan Chapter 4 of Sediment and Erosion Control Plan
Project Proposal Chapter 18	Sedimentation ponds are structures incorporated into the base of a decline to collect runoff from areas of high sedimentation potential during construction. Sediment collected in the ponds can be allowed to settle and the less turbid water naturally overflows to the surrounding environment or can be pumped to other areas for further settling or, if necessary, treatment prior to discharge. During the early phases of construction, sedimentation ponds will be constructed in several areas to allow water to settle prior to discharge into the surrounding environment.	Section 4.2 of Sediment and Erosion Control Plan
Project Proposal Chapter 18	Specific measures BMC will follow during any in-water works (including but not limited to draining ponds over the proposed ABM open pit and the diversion of Fault Creek) will include:	Section 4.15 of Sediment and Erosion Control Plan

Reference No.	Proponent Commitment	Where addressed
	- o Diverting streams/seeps and isolating work activities wherever practicable; - o Operating equipment in a manner that minimizes sediment release where work areas cannot be isolated; - o Instream sediment control structures (e.g., silt curtains); - o Installing water diversion pump intakes in a manner that prevents entrainment of sediments; and - o Installing water diversion discharge points in a manner that prevents erosion of the downstream substrates.	
YESAB R102	During any of the Project phases if maintenance activities/construction occur within the wetted perimeter it shall comply with the turbidity compliance limits. The compliance sampling points will be located 50 m and 100 m downstream of activities and sampled at a minimum frequency of every two hours during activities within the wetted perimeter. If the limits are exceeded, turbidity generating activities will be stopped or adjusted to ensure compliance.	See Chapter 2 of the Sediment and Erosion Control Plan – Note that the monitoring identified in Chapter 2 states 25 m upstream and 25 m downstream – this change has been made as it is more protective of the receiving environment.
YESAB R103	Detailed sediment pond designs will be included as part of the detailed design phase prior to application of the Water Licence.	Section 4.2.1 of the Sediment and Erosion Control Plan
Decision Document Term #12.	The Proponent shall ensure that LFN and RRDC have opportunities to participate in and influence the development of environmental and socioeconomic management plans and closure objectives developed for the Project to ensure that Kaska can collaboratively design, collect, report, manage and communicate the results of the monitoring programs and adaptive management plans to their community members. The Proponent will make participant funding available to Kaska to support the incorporation of Kaska perspectives on Kaska laws as well as support the inclusion of Kaska members, including Elders and land stewards, in the regulatory process, the monitoring of impacts, the implementation of adaptive management and the Proponent's commitments for the life of the Project (regulatory to reclamation).	Section 1.3 of the Sediment and Erosion Control Plan
Decision Document Term #13.	The Proponent shall ensure that LFN has the opportunity to be part of the Proponent–Kaska environmental, cultural and heritage management program.	Section 1.3 of the Sediment and Erosion Control Plan