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Public Services and Procurement Canada

**CAM-C Site Remediation
Matheson Point, Nunavut
(Ref.: EW699-172531)**

Erosion, Sediment and Drainage Control Plan

Preliminary Version

Date: September 2017

Ref. N°: P-0012811-0-01-001



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REVISION AND PUBLICATION REGISTER		
Revision N°	Date	Modification And/Or Publication Details
0A	2017-09-06	Preliminary Version

1 INTRODUCTION

Erosion is a process whereby materials (soil or rock) are transported from one location to another by natural means such as wind, water flow or ice. Human activities can greatly increase the natural rate of erosion with the potential to cause damage to the environment. If not properly mitigated, many of the activities that will be performed during the Environmental Site Remediation of CAM-C have the potential to increase the natural erosion rate.

Erosion caused by water run-off poses the greatest risk during this project. Activities such as the excavation of contaminated soil or buried debris, production of granular material, road construction and use, as well as potential debris removal from waterways all pose potential erosion risks. This form of erosion can increase siltation in waterways and present dangers to local fish populations such as respiratory problems and smothering of spawning beds.

The goal of this plan is to identify at-risk work activities and outline procedures that will minimize or eliminate erosion where possible.

2 PROCEDURES FOR SOIL AND BURIED DEBRIS EXCAVATIONS

2.1 PRE-EXCAVATION SITE INSPECTION

Prior to any excavation or grading activities in a designated sector, the Foreman will inspect the area and define the mitigation measures to be undertaken to prevent water run-off erosion.

2.2 MITIGATION MEASURES PRE-EXCAVATION

Mitigation measures may take the form of earthworks or engineered controls; prior to commencing the excavation a mitigation plan will be developed and implemented which may include any of the following measures where appropriate:

- ▶ Redirection of the surface waters from the surrounding areas by:
 - Grading the area to promote drainage away from the excavation.
 - Construction of a berm to prevent the infiltration of water into the excavation.
- ▶ The installation of engineered erosion controls such as:
 - Silt fences and curtains in adjacent waterways.
 - Installation of silt fences within the excavation if it is impossible to redirect natural water flow.
 - Installation of fish exclusion netting as needed.

2.3 MITIGATION MEASURES DURING EXCAVATION

During excavation, the following mitigation measures will be followed as needed:

- ▶ Slope stabilization:
 - Walls of the excavation should be properly sloped and levelled with the back of the bucket to prevent loose material from falling into the excavation.
 - Water for dust suppression will be carefully used and frequent low volume applications will be preferred. If required, slopes will be covered with humidified tarps or geotextile sheets.
 - Areas of exposed erodible soil will be stabilized by “back-blading”, grading and/or compacting to meet engineered slope requirements.
- ▶ Installation of additional engineered controls as deemed necessary.

2.4 MITIGATION MEASURES POST-EXCAVATION

Post-excavation mitigation measures may be needed if dewatering of the excavation is necessary. The following mitigation measures will be followed as needed:

- ▶ Dewatering procedures:
 - The water will need to be sampled first and treated as required.
 - If especially silty, the water may be filtered or allowed to settle prior to discharge.
 - Pumping of water from sumps should be done in such a manner as to avoid pumping of silt accumulated on the bottom.
 - Discharge should be done on a vegetated area, on an area covered with a geotextile, or into a silt trap to prevent erosion caused by water speed exiting the conduit.
 - Water should be pumped to the land and must be 31 m from natural drainage courses with no direct channeling to water bodies and 100 m from fish-bearing water bodies.
- ▶ Excavations will be backfilled as soon as possible to prevent accumulation of water from precipitation events or run-off.

3 PROCEDURES FOR ROAD REPAIRS AND MAINTENANCE, AND BORROW AREA DEVELOPMENT

The roads, trails and Borrow Areas (BAs) of CAM-C may increase both water and wind based modes of erosion.

To minimize the effects of road systems and BAs to natural erosion processes, a series of drainage ditches will be constructed along site road systems. The drainage ditches will feature a network of siltation pools and silt fencing to promote the settling of sediments from run-off water.

These pools and fences will be inspected regularly by the site Foreman and maintenance will be performed as necessary. The system may be upgraded or expanded as required. Regular road maintenance will be performed to promote positive drainage from roadways and prevent channeling. To prevent erosion caused by the fording of streams and rivers, steel culverts will be used to repair the section of roads that were washed out and to replace defective culverts present on-site.

An assessment of water flow will be performed during the spring freshet and throughout the 2017 season to determine the quantity of culverts needed to accommodate the flow at each necessary water crossings. To proceed with the installation of culverts, an excavator will be used to remove excess soil and to place the culverts at the bottom of the excavation. Granular material will be placed to stabilize the culverts and to act as a foundation for the road. The minimum thickness of granular material placed over the culverts will be 600 mm. Prior to the excavation process, silt settlement basins will be dug downstream from the excavation and silt fences will be placed to limit silt accumulation within the site water systems. Care will be taken while using site BAs to install the appropriate engineering controls. Run-off from BAs will be directed into the road drainage ditch system to allow for siltation. After the BAs are no longer of use, the area will be re-graded to promote positive drainage and reduce erosion.

To minimize wind erosion a strict speed limit will be enforced on-site and water will be sprayed on the roadway as needed to suppress dust. Frequent low volume wetting events is the preferred method of application.

4 MATERIAL AND EQUIPMENT

A list of erosion control equipment to be available on-site is detailed in the table below.

Erosion, Sediment and Drainage Control Supplies	
Description	Quantity
Floating Silt Curtain	60 m
Culverts	6
Silt Fencing 36" x 100'	1
Drainage Piping (4-inch)	100 m
Various Pumps and Hoses	Numerous

5 MONITORING AND MAINTENANCE

Regular inspection of the areas of concern will be conducted by the Site Superintendent and the Foreman. The inspection will focus on the performed mitigation measures, their application, integrity, effectiveness, and to determine if maintenance work is required.



Should the inspection reveal improper capture of the sediments, then the mitigation plan will be amended or corrective works will be performed in a timely manner. The DR will be involved in the process of review/acceptance prior to implementing any corrective measures.

Sediment pools and silt fencing will be maintained regularly to ensure their effectiveness.

It should be noted that all temporary engineering controls such as culverts and silt fences will be removed once all works are completed.

