



- **City of Iqaluit**

**Spill Response and Erosion and Sediment
Control Plan**

Type of Document
Final Report

Project Name
Road to the Northwest Aggregate Deposit

Project Number
OTT-00219428-A0

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Date Submitted
December 2014

City of Iqaluit

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Table of Contents

	Page
1 Introduction	1
2 Site Description	2
3 Regulations	4
4 Contacts & Regulatory Authorities	5
5 Potential Contaminants and Spill Scenarios	6
6 Reportable Spill Quantities	7
7 Spill Response Procedures	8
7.1 Spills on Land	8
7.2 Spills on Water	8
7.3 Spills on Snow and Ice	9
7.4 Additional Spill Delineation/Monitoring	10
8 Spill Kit and Training Requirements	11
8.1 Spill Kit	11
8.2 Additional Spill Response Supplies	11
8.3 Spill Kit Locations	11
8.4 Training	12
9 Erosion and Sediment Control Plan	13
9.1 Introduction	13
9.2 Plan Objectives	13
9.3 Responsibility	13
9.4 Contingency Plans	13
9.5 Scheduling	14
9.6 Inspection and Maintenance	14
9.7 Response Procedures	14
9.8 Sediment Control Measures	14
9.8.1 Sediment Control Measures	14
9.8.2 Site Remediation	16
10 General Safety Practices and Site Rules	17
11 Closure	18

List of Appendices

Appendix A – NT-NU Spill Report Form
 Appendix B – Typical Silt Fencing Specification

List of Tables

	Page
Table 4.1 - Contacts.....	5
Table 4.2 - Additional Agencies.....	5
Table 6.1 - Reportable Quantities.....	7
Table 10.1 - Outside Emergency Contacts	17

List of Figures

	Page
Figure 1 – Location Plan	3
Figure 2 – Silt Fencing Detail	15

1 Introduction

Exp Services Inc. (**exp**) was retained by the City of Iqaluit (City) to prepare a Spill Response Plan (SRP) and an Erosion and Sediment Control Plan (ESCP) for the construction of the Road to the Northwest Aggregate Deposit. This SRP also demonstrates the City's stewardship in environmental management.

The purpose of the SRP is to address potential environmental spill incidents that may occur during the routine operation of the borrow pits. The SRP is designed to be protective of the local natural environment and the new aggregate sources.

The SRP includes a review of appropriate government acts and regulations, the identification of foreseeable spill scenarios, spill response procedures and general health, safety and emergency response requirements necessary when conducting activities that may require contact with the subsurface materials. The SRP does not replace any Health & Safety protocols, procedures, etc. already established by the City but rather is intended to be complimentary to existing protocols.

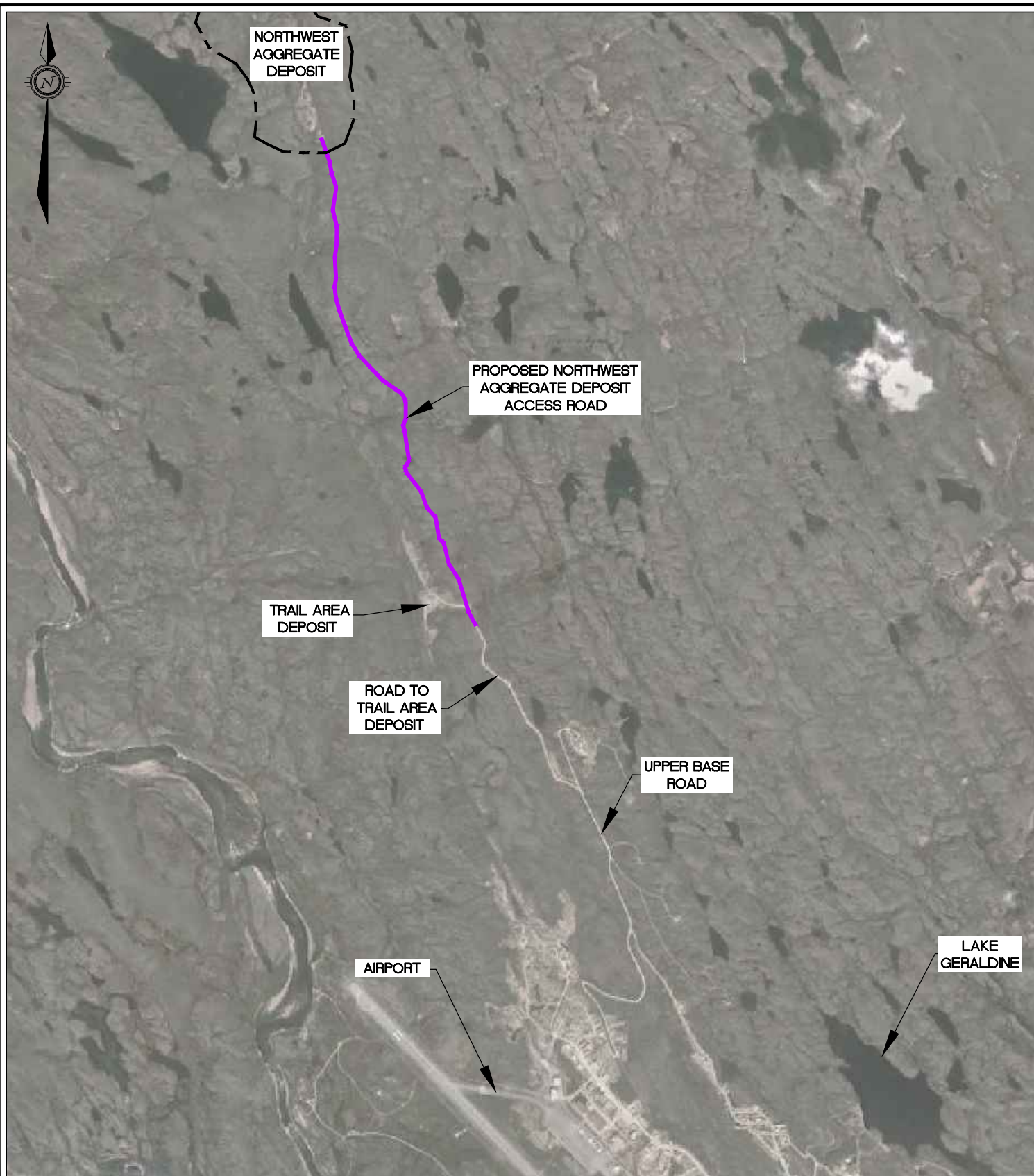
The purpose of the ESCP is to minimize the environmental impact on aquatic features and resources related to the erosion and transportation of sediment from the construction of the Road to the Northwest Granular Deposit.

Situations may arise during the site operations that are beyond the scope of the safety procedures stated in this document. In such a situation, it may be necessary to stop on-site work until a revised procedure or SRP or ESCP is prepared to reflect the changing conditions.

It is recommended that all persons involved with on-site operations read the SRP and ESCP. If there are any questions regarding any aspect to this document, individuals are encouraged to contact **exp** for additional information or clarification.

2 Site Description

The Road to the Northwest Aggregate Deposit is located north of the City, for which this SRP was developed, are shown on Figure 1 – Location Plan. The Location Plan shows the location of the road to the aggregate deposits, nearby water courses and interpreted overland drainage directions. The locations are best described as borrow pits that contain no permanent or semi-permanent structures. As such, no potential contaminants are likely to be stored at the pits.



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scale NTS	CLIENT: CITY OF IQALUIT	project no. OTT-00219428-A0
date NOV. 2014	TITLE: LOCATION PLAN	FIG. 1
drawn by IPC		

3 Regulations

With respect to spills, the Environmental Protection Act (R 068 93) requires that all spill response plans include:

- The name, address and job title of the owner or person in charge, management or control of the facility;
- The name, job title and 24-hour telephone number for the person(s) responsible for activating the spill response plan;
- A description of the facility, a description of the type and amount of contaminants normally stored at the facility and a site map of the facility;
- The steps to be taken to report, contain, clean up and dispose of contaminants in the case of a spill;
- The means by which the spill response plan is activated;
- A description of the training provided to employees to respond to a spill;
- An inventory of and the location of response and clean-up equipment available to implement the spill response plan; and,
- The date the spill response plan was prepared.

4 Contacts & Regulatory Authorities

The following table includes the contact information for the persons responsible for the facility. The persons listed below should be contacted in the event of a spill.

Table 4.1 - Contacts

City of Iqaluit Contacts		
Name	Job Title	24-Hour Telephone #
Paul Clow	Project Officer	867-979-6363 ext.233
Richard Sparham	Project Officer	867-979-6363 ext. 259
Mark Abbott	Safety Officer	867-979-6363 ext. 257
Dispatch	After Hours Emergency	867-979-5650

Nunavut Excavating Contacts		
Name	Job Title	24-Hour Telephone #
	Superintendent	
	Superintendent	
	Foreman	
	Foreman	
	Safety Coordinator	
	Nunavut Excavating	

In each instance that a spill is identified, the Emergency Spill Hotline and the AANDC Water Resources Inspector shall be contacted as soon as possible. A NT-NU Spill Report Form (Appendix A) should also be completed and faxed to the Emergency Spill Hotline. The necessity to contact the other agencies will be contingent upon direction from the Emergency Spill Hotline.

Emergency Spill Hotline: Phone: (867) 920-8130, Fax (867) 873-6924

AANDC Water Resources Officer: Phone: (867) 975-4540

In addition to the local contacts described above, the following table summarizes the additional regulatory authorities that have a vested interest in the event of a spill.

Table 4.2 - Additional Agencies

Agency	Legislation	Contact Phone #
Nunavut Water Board	Nunavut Waters and Surface Right Tribunal Act	(867) 360-6338
Nunavut Impact Review Board	Nunavut Land Claims Agreement Act	(867) 983-2593
Environment Canada	Canadian Environmental Protection Act, 1999	(867) 975-4464
Transport Canada (Coast Guard)	Transportation of Dangerous Goods Act	(867) 979-5269
Department of Fisheries and Oceans	Fisheries Act	(867) 645-2871

5 Potential Contaminants and Spill Scenarios

Potential spill scenarios are dependent on the types and volumes of materials that are being used on the sites and the activities being carried out. For the purpose of this SRP, spill sizes are described as small (<10 litres), medium (>10 litres and <100 litres) or large (>100 litres).

The materials (potential contaminants) that are anticipated to be used on the site include gasoline, diesel fuel, hydraulic oil, motor oil and other lubricants, antifreeze and coolants. Spills may be the result of any of the following occurrences:

- Leaks or ruptures of storage tanks;
- Valve or line failure in systems, vehicles or operating equipment;
- Heat expansion due to overfilling;
- Improper storage;
- Vehicular accidents;
- Spill during transfer of liquid; and/or,
- Vandalism.

6 Reportable Spill Quantities

In the event of a spill, the following table is to be used as a guide to determine if the spill should be reported to the proper authorities. Any spilled quantities that exceed the specified amounts must be reported to the **Emergency Spills Hotline**. Spills of any quantity that occur near or into fish-bearing waters or sensitive environment, wildlife or habitat must be reported. In addition, spills of any quantity that pose an imminent threat to human health or life or listed species at risk or critical habitat must also be reported. It is recommended that any spill of significant size be reported and the advice received should be followed.

Table 6.1 - Reportable Quantities

Item	TDGA ² Class	Contaminant	Amount Spilled
1	2	Explosives	Any amount
2	2.1	Compressed Gas (flammable)	Any amount of gas from containers with capacity greater than 100 kg
3	2.2	Compressed Gas (non-corrosive, non-flammable)	Any amount of gas from containers with capacity greater than 100 kg
4	2.3	Compressed Gas (toxic)	Any amount
5	2.4	Compressed Gas (corrosive)	Any amount
6	3.1, 3.2, 3.3	Flammable Liquid	100 L
7	4.1	Flammable Solid	25 kg
8	4.2	Spontaneously Combustible Solids	25 kg
9	4.3	Water Reactant Solids	25 kg
10	5.1	Oxidizing Substances	50 L or 50 kg
11	5.2	Organic Peroxides	1 L or 1 kg
12	6.1	Poisonous Substances	5 L or 5 kg
13	6.2	Infectious Substances	Any amount
14	7	Radioactive	Any amount
15	8	Corrosive Substances	5 L or 5 kg
16	9.1(in part)	Misc. products or Substances Excluding PCB Mixtures	50 L or 50 kg
17	9.2	Environmentally Hazardous	1 L or 1 kg
18	9.3	Dangerous Wastes	5 L or 5 kg
19	9.1 (in part)	PCB Mixtures of 5 or More Parts Per Million	0.5 L or 0.5 kg
20	None	Other Contaminants	100 L or 100 kg

Notes:

- 1) Environmental Protection Act, Consolidation of Spill Contingency Planning and Reporting Regulations
- 2) TDGA Class – Transportation of Dangerous Goods Class under the *Transportation of Dangerous Goods Act*.

7 Spill Response Procedures

The following section describes the appropriate spill response procedures that should be followed in the event of a spill to various media (bedrock, gravel, soil, water, ice or snow).

7.1 Spills on Land

For spills on land (soil, gravel, sand, rock, and vegetation), the following procedure should be followed;

1. Extinguish all sources of ignition (i.e., shut off engines, no smoking).
2. If possible, identify the spilled material.
3. Make sure the area is safe for entry and the spill does not represent a threat to the health or safety of the responder or others at the spill site.
4. Assess whether the spill can be readily stopped or brought under control and if safe and possible, stop the source of the spill (i.e., plug hole, close valve, install upright container) or place tarp under spill source and build up tarp edges to contain spill.
5. If the spill is sufficiently large that it cannot be controlled with the materials at hand, the spill should be reported immediately.
6. Stop spilled liquids from spreading or entering waterways using absorbent materials or a soil dyke down slope from the spill.
7. Contact facility supervisor and report the spill.
8. If possible with materials at hand, clean up remaining spilled material and store in a secure container for disposal. Do not flush area with water.
9. If possible, pump any contained liquid into drums.
10. Complete a Spill Reporting Sheet.
11. Contact: Emergency Spill Hotline: Phone: (867) 920-8130, Fax (867) 873-6924 for additional advice.
12. Contact: AANDC Water Resources Officer: Phone: (867) 975-4540 to report the spill.
13. Submit to the AANDC Water Resources Officer, a detailed report including the GPS location of the spill, no later than thirty (30) days after initially reporting the event.

7.2 Spills on Water

For spills on water, the following procedure should be followed:

1. Extinguish all sources of ignition (i.e., shut off engines, no smoking).
2. If possible, identify the spilled material.
3. Make sure the area is safe for entry and the spill does not represent a threat to the health or safety of the responder or others at the spill site.
4. Assess whether the spill can be readily stopped or brought under control and if safe and possible, stop the source of the spill (i.e., plug hole, close valve, upright container).

5. If the spill is sufficiently large that it cannot be controlled with the materials at hand, spill report the spill immediately.
6. Use sorbant booms to contain spill for recovery, place sorbant sheets on water within boomed perimeter. For narrow waterways, place one or more booms across the waterway, downstream of the spill location and anchor boom ends on each bank. Store saturated sorbant sheets and booms in drums for disposal.
7. Contact facility supervisor and report the spill.
8. If possible with materials at hand, clean up remaining spilled material and store in a secure container.
9. Complete a Spill Reporting Sheet.
10. Contact: Emergency Spill Hotline: Phone: (867) 920-8130, Fax (867) 873-6924 for additional advice.
11. Contact: AANDC Water Resources Officer: Phone: (867) 975-4540 to report the spill.
12. Submit to the AANDC Water Resources Officer, a detailed report including the GPS location of the spill, no later than thirty (30) days after initially reporting the event.

7.3 Spills on Snow and Ice

Spills on ice present the potential for immediate access of the contaminants to water therefore, immediate response to the spill is essential. For spills on snow and ice, the following procedure should be followed:

1. Extinguish all sources of ignition (i.e., shut off engines, no smoking).
2. If possible, identify the spilled material.
3. Make sure the area is safe for entry (i.e., ice thickness) and the spill does not represent a threat to the health or safety of the responder or others at the spill site.
4. If the spill is sufficiently large that it cannot be controlled with the materials at hand, the spill should be reported immediately.
5. Assess whether the spill can be readily stopped or brought under control and if safe and possible, stop the source of the spill (i.e. plug hole, close valve, install upright container) or place tarp under spill source and build up tarp edges to contain spill.
6. Stop spilled liquids from spreading or entering waterways using absorbent materials or a snow/soil dyke.
7. Contact facility supervisor and report the spill.
8. If possible with materials at hand, clean up remaining spilled material and store in a secure container (i.e., drum, polyethylene bags). Store impacted snow in drums for disposal.
9. Contact: Emergency Spill Hotline: Phone: (867) 920-8130, Fax (867) 873-6924 for additional advice.
10. Contact: AANDC Water Resources Officer Phone: (867) 975-4540 to report the spill.
11. Submit to the AANDC Water Resources Inspector, a detailed report including the GPS location of the spill, no later than thirty (30) days after initially reporting the event.

7.4 Additional Spill Delineation/Monitoring

As a result of a large spill in which not all of the spilled material can be readily recovered as described above, additional delineation in the form of a subsurface investigation (i.e., test pits, boreholes, and monitoring wells) may be required to determine the lateral and vertical extents of the impacts to the subsurface soil and/or groundwater. The additional delineation/monitoring information will be used to develop an appropriate remediation plan. In such cases, a qualified environmental consultant should be retained to provide advice with respect to how to proceed with the additional assessment.

8 Spill Kit and Training Requirements

The following section presents the recommended minimum requirements for the content and number of spill kits that should be present.

8.1 Spill Kit

Each spill kit should be inspected regularly to ensure that it contains, as a minimum, the following:

- 1 – 205 litre, open top steel drum with a lid, bolting ring and gasket;
- 1 Spark proof shovel;
- 1 package of 10 disposable 5 mil polyethylene bags (approx. 65 cm x 100 cm);
- 4 – 12.5 cm (approx. 5") x 3 m (approx. 10') sorbant (oil-absorbing) booms;
- 10 kg bag of sorbant particulate;
- 1 bail of 50 cm x 50 cm (approx.) sorbant sheet (100 Sheets/bail);
- 1 x 5m x 5m approx. plastic tarp;
- 2 pairs of oil resistant gloves; and,
- 2 pairs of splash protective goggles.

8.2 Additional Spill Response Supplies

In addition to the materials contained in the spill kits, an inventory of the following supplies should be available for use if required.

- 10 – 205 litre, open top steel drum with a lid, bolting ring and gasket;
- 2 Spark proof shovels;
- 5 packages of 10 disposable 5 mil polyethylene bags (approx. 65 cm x 100 cm);
- 10 – 12.5 cm x 3 m sorbant (oil-absorbing) booms;
- 5 x 10 kg bags of sorbant particulate;
- 5 bails of 50 cm x 50 cm (approx.) sorbant sheet (100 Sheets/bail);
- 2 pairs of oil resistant gloves; and,
- 2 pairs of splash protective goggles.

8.3 Spill Kit Locations

The spill kit, with the exception of the shovel, can be contained within the 205 L drum which should be sealed securely to protect the contents. The drum should also be accessible without the use of tools (i.e., bolt ring only finger tight). The bolt ring should be inspected regularly to ensure that it turns freely and lubricated if it does not. At least one spill kit should be clearly identified and present on the site when a pit is being actively worked.

8.4 Training

To ensure the effectiveness of the SRP, the following actions should be followed:

1. The SRP should be reviewed, as a minimum, on an annual basis and updated as required by changes in operation and/or technology.
2. The SRP should be distributed to the personnel on the site.
3. The personnel should be informed of the locations of all potentially hazardous materials and their associated Material Safety Data Sheets (MSDS).
4. The personnel should be trained in the use of the MSDS and the techniques and materials used to contain and remediate spilled materials.
5. The personnel should be informed as to the importance of first response with respect to the protection of human health and safety, the environment, property, wildlife and the ecosystem by reducing the impact of spills.

9 Erosion and Sediment Control Plan

9.1 Introduction

The following erosion and sediment control plan (ESCP) is intended to minimize the environmental impact on aquatic features and resources related to the erosion and transportation of sediment from the construction of the Road to the Northwest Granular Deposit.

9.2 Plan Objectives

The objectives of this ESCP are:

- Protect water quality, both on site and downstream, from impacts due to activities related to the construction of the Road to the Northwest Granular Deposit relating to the erosion and transportation of sedimentation.
- Define the roles and responsibilities for the implementation of the ESCP and present in case of accidental events.

9.3 Responsibility

Responsibilities of the contractor who is responsible for the construction of the Road to the Northwest Granular Deposit are:

- Plan implementation
- Meeting objectives
- Responding to incidental events, specifically the responsibility of the contractor shall include
- Meeting the objectives of the ESCP
- Implementation of the ESCP
- Inspection of the ESCP works
- Scheduling works involving soil disturbance
- Provide a contact person in case of accidental events
- Respond as required to problems as they arise regarding the ESCP

9.4 Contingency Plans

Construction activities often require changes to respond to actual site conditions such as slopes, soils and drainage courses. When there are changes to the construction activities changes are also required to the ESCP. Changes will be documented by the contractor and forwarded to the engineer for review and approval. The engineer shall notify the City of any changes to the ESCP due to changes in the construction activities due to site conditions.

9.5 Scheduling

As the contractor is ultimately responsible for the scheduling of the works which may impact the environment through erosion or transportation of sediment, it is the contractor's responsibility for scheduling the implementation of the sedimentation and erosion controls outlined in the ESCP. The scheduling of the implementation shall be governed by the following principles.

- Prior to the removal of any vegetation cover or work within water ways, effective measures for erosion and sediment control must be in place to protect water quality adjacent to the site of the works.
- The contractor shall be responsible for assessing risk of sedimentation and erosion due to precipitation and shall be responsible to respond accordingly. This includes rescheduling work involved the disturbance of sedimentation which may be affected by precipitation.

9.6 Inspection and Maintenance

It shall be the contractor's responsibility to regularly and frequently inspect all aspects of the ESCP and shall be responsible for implementing repairs to maintain the aspects of the ESCP in a satisfactory manner.

9.7 Response Procedures

In the event of an accidental erosion and sediment control event, the contractor shall be responsible for responding to correct or mitigate the event. The contractor shall be responsible to:

- Respond immediately upon becoming aware of the accidental event to determine appropriate response measures to mitigate and correct the accidental event.
- Monitor the effectiveness of any corrective activity undertaken.

In the event of an accidental erosion and sediment control event results in the degradation of fish habitat the contractor shall:

- Prepare documentation of the response as detailed above.
- Advise the engineer, City and Aboriginal Affairs and Northern Development Canada.

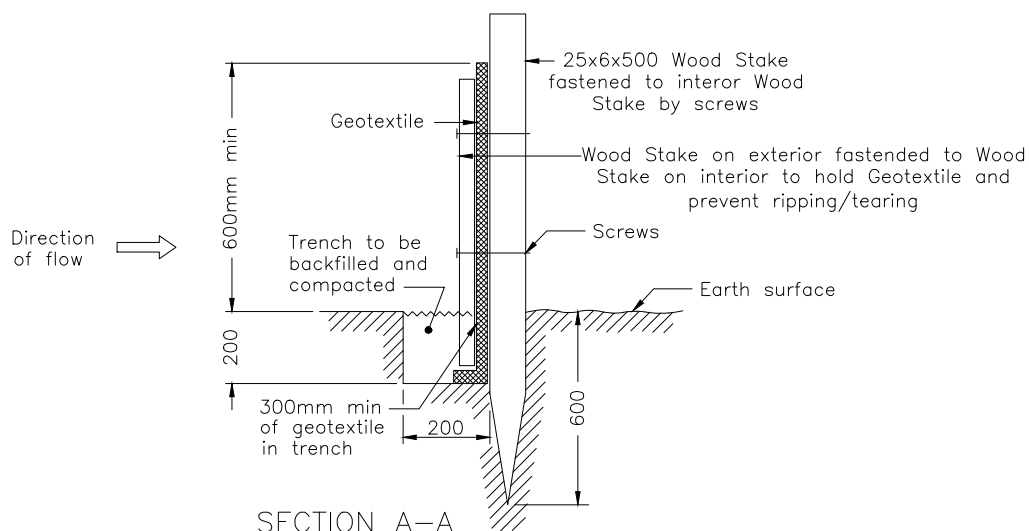
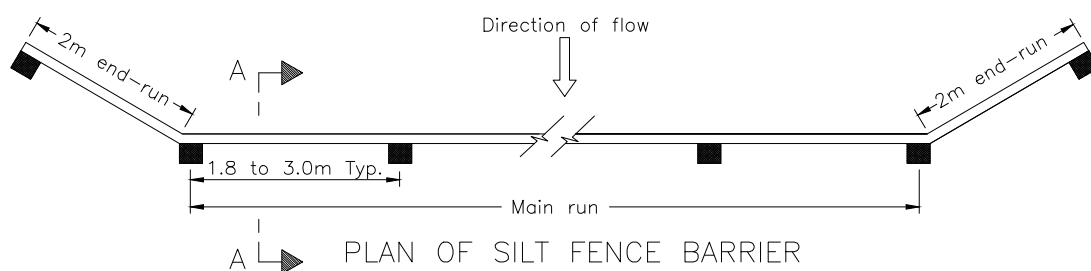
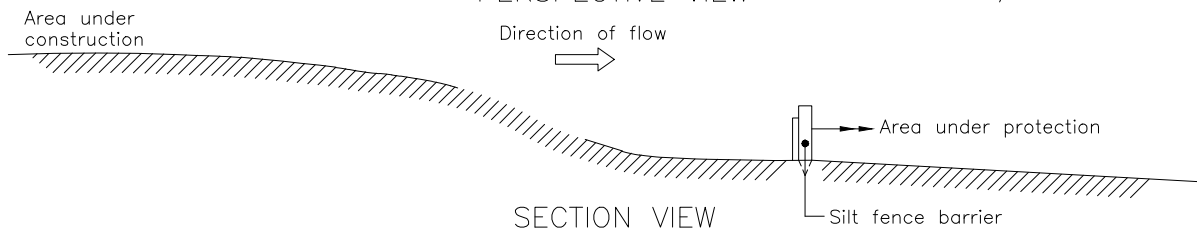
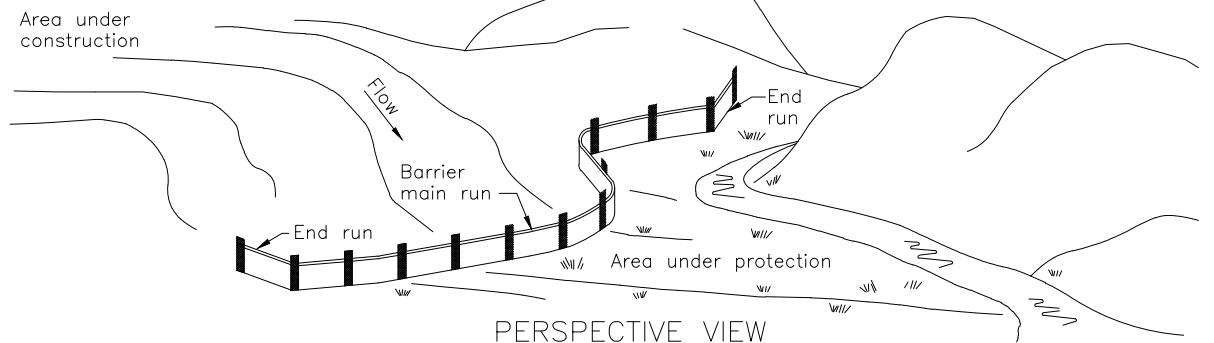
9.8 Sediment Control Measures

9.8.1 Sediment Control Measures

Sediment control measures are detailed in the ESCP and included in the construction documents. The general guide to the required sediment control measures to be undertaken are as follows:

- Installation of silt fencing along the bottom of the excavated/exposed slopes
- Installation of silt fencing between areas of construction and natural watercourses
- Maintaining a stock pile of additional fencing on site to address accidental events and ongoing maintenance of silt control measures

A typical detail of the required silt fencing is shown on Figure 2. Standard technical specification section pertaining to the ESCP are included in Appendix B.



NOTE:

A All dimensions are in millimetres or metres unless otherwise shown.



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scale NTS	CLIENT: CITY OF IQALUIT	project no. OTT-00219428-A0
date NOV. 2014	TITLE: SILT FENCE DETAIL	FIG. 2
drawn by IPC		

9.8.2 Site Remediation

The following measures relate to activities associated with the excavation and construction of the development of the Road to the Northwest Granular Deposit.

- Prior to the removal of any vegetative cover or works within a watercourse, effective measures for erosion and sediment control must be in place to protect the water quality on site and downstream of the site. Removal of natural vegetation cover shall be delayed until immediately prior to excavation work to minimize the potential for erosion and sedimentation.

10 General Safety Practices and Site Rules

The following is a list of site rules that should be followed to maintain safe working conditions during a spill response:

1. Eating, drinking, chewing gum and smoking are prohibited in contaminated or potentially contaminated areas, or where the possibility for the transfer of contamination exists. This would include areas of active excavation and metal removal.
2. Personnel who have worked on-site shall wash their hands and face thoroughly with soap and water and remove themselves from the spill area prior to eating, drinking or smoking.
3. All field crew workers should be aware of potentially dangerous situations that they should avoid (i.e. the presence of strong, irritating or nauseating odours). Field crew workers should also be familiar with the physical characteristics of the site including:
 - wind direction in relation to areas of known contamination;
 - accessibility to equipment and vehicles;
 - communications; and,
 - site access.

Table 10.1 - Outside Emergency Contacts

Agency	Function	Phone Number
Ambulance	Medical Emergency	(867) 979-4422
Hospital	Medical Emergency	(867) 979-7350
Fire	Fire, Accident or Rescue	(867) 979-4422
Police	Security, Vandalism	(867) 979-5211
City of Iqaluit	Dispatch	(867) 975-5650

11 Closure

This Spill Response and Erosion and Sediment Control Plan has been prepared for the City for the construction of the Road to the Northwest Aggregate Deposit. It does not replace, nor is intended to replace, the general provision of the applicable Federal and Territorial statutes regarding workplace safety or any protocols previously established by the City. Instead, it may be used to augment any existing plans.

Appendix A – NT-NU Spill Report Form



NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

REPORT LINE USE ONLY					
N	RECEIVED AT SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLED	REPORT LINE NUMBER
		STATION OPERATOR		YELLOWKNIFE, NT	(867) 920-8130
LEAD AGENCY <input type="checkbox"/> EC <input type="checkbox"/> CCG <input type="checkbox"/> GNWT <input type="checkbox"/> GN <input type="checkbox"/> ILA <input type="checkbox"/> INAC <input type="checkbox"/> NEB <input type="checkbox"/> TC			SIGNIFICANCE <input type="checkbox"/> MINOR <input type="checkbox"/> MAJOR <input type="checkbox"/> UNKNOWN		FILE STATUS <input type="checkbox"/> OPEN <input type="checkbox"/> CLOSED
AGENCY		CONTACT NAME	CONTACT TIME	REMARKS	
LEAD AGENCY					
FIRST SUPPORT AGENCY					
SECOND SUPPORT AGENCY					
THIRD SUPPORT AGENCY					

Appendix B – Typical Silt Fencing Specification

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

- .1 Payment for the supply and delivery and installation of silt fence shall be by the linear metre of silt fence installed, as measured by the engineer.

Part 2 Products

2.1 MATERIALS

- .1 Synthetic filter fabric shall be a pervious sheet of propylene, nylon, polyester or ethylene yarn and shall be certified by the manufacturer or supplier as conforming to the following requirements:

<u>Physical property</u>	<u>Test</u>	<u>Requirements</u>
Filtering Efficiency	ASTM 5141	75% (minimum)
Tensile Strength at 20% (max.) Elongation	VTM-52	Extra Strength- 50 lbs./linear inch (minimum) Standard Strength- 30 lbs./linear inch (minimum)
Flow Rate	ASTM 5141	0.2 gal./sq. ft./min. (minimum)
Ultraviolet Radiation	ASTM-G-26	90% (minimum)

- .2 Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a maximum usable construction life.
- .3 If wooden stakes are utilized for silt fence construction, they must have a diameter of 50mm when oak is used and 100 mm when pine is used. Wooden stakes must have a minimum length of 1500mm.
- .4 If steel posts (standard "U" or "T" section) are utilized for silt fence construction, they must have a minimum weight of 1.33 pounds per linear foot and shall have a minimum length of 1500mm.
- .5 Wire fence reinforcement for silt fences using standard-strength filter cloth shall be a minimum of 14 gauge and shall have a maximum mesh spacing of 150mm.

Part 3 Execution

3.1 APPLICATION

- .1 The height of a silt fence shall be a minimum of 16 inches above the original ground surface and shall not exceed 850mm above ground elevation.

- .2 The filter fabric shall be purchased in a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are unavoidable, filter cloth shall be spliced together only at a support post, with a minimum 150mm overlap, and securely sealed.
- .3 The trench shall be excavated approximately 200mm wide and 200mm deep on the upslope side of the proposed location of the measure.
- .4 When wire support is used, standard-strength filter cloth may be used. Posts for this type of installation shall be placed a maximum of 3000mm apart. The wire mesh fence must be fastened securely to the upslope side of the posts using heavy duty wire staples at least one inch long, tie wires or hog rings. The wire shall extend into the trench a minimum of two inches and shall not extend more than 850mm above the original ground surface. The standard-strength fabric shall be stapled or wired to the wire fence, and 200mm of the fabric shall be extended into the trench. The fabric shall not be stapled to existing trees.
- .5 When wire support is not used, extra-strength filter cloth shall be used. Posts for this type of fabric shall be placed a maximum of 1800mm apart. The filter fabric shall be fastened securely to the upslope using one inch long (minimum) heavy-duty wire staples or tie wires and eight inches of the fabric shall be extended into the trench. The fabric shall not be stapled to existing trees. This method of installation has been found to be more commonplace than #4.
- .6 If a silt fence is to be constructed across a ditch line or swale, the measure must be of sufficient length to eliminate end flow, and the plan configuration shall resemble an arc or horseshoe with the ends oriented upslope. Extra-strength filter fabric shall be used for this application with a maximum 900mm spacing of posts.
- .7 The 200mm by 200mm trench shall be backfilled and the soil compacted over the filter fabric.

END OF SECTION