



ROHL Global Networks Small HDD Emergency Frac-Out Plan Northwest Territories Dempster Fibre Project

Submitted to MVLWB
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Date Written	2022-02-23
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Revision History

Date	Owner	Comments
April 14, 2022	ROHL Engineering and Environmental	V1.0 submitted to MVLWB for review

Conformity Table- Permits

LUP	WL	Requirement	Section of Plan
Part C, Condition 31	Part G, Conditions 11 & 12	Develop an Emergency Frac-out Response Plan for the Project, to be implemented in the event of a release of drilling mud.	2.0, 3.0, 4.0, 5.0

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1.0 PROJECT BACKGROUND

Company Name, Location, and Mailing Address

ROHL Global Networks Inc. (RGN)
11211 266 Street Acheson, AB
T7X 6E1

Primary Contact: Gary Seed – Project Manager, Field Operations
Phone: (867) 332-8124
Email: GSeed@rohlglobal.com

Purpose & Scope

The purpose of this Small HDD Emergency Frac-Out Plan is to establish procedures for addressing potential impacts associated with the inadvertent release of sediment or sediment-laden water during directional drilling under streams, rivers, wetlands, or other watercourses throughout the duration of the Dempster Fibre Project (DFP). Emergency Frac-Out activities will be conducted in any Project areas where Small HDD is utilized as an installation methodology. These activities will support the continuation of a healthy environment and any future human activities that will occur in the project area. This plan is applicable to all construction crew personnel on the Project.

Effective Date

This plan will be effective from the date of approval by the Mackenzie Valley Land and Water Board and will expire on the date that the permit is closed.

Revisions

Any revisions to the plan will be submitted to the Mackenzie Land and Water Board for approval and regulating agencies prior to implementing any changes.

Distribution

This plan and the most recent revisions will be distributed to all staff and contractors working on the Project. The Plan will be presented and reviewed during an orientation prior to the start of construction. The Small HDD Emergency Frac-Out Plan will be included as part of new staff orientation activities.

Licenses, Permits, and Fees

All Small HDD Emergency Frac-Out activities associated with the construction, operation, and maintenance of the DFP will be done in accordance with this plan, and all applicable federal, territorial, and municipal laws and regulations.

2.0 CONTINGENCY PLAN IN THE EVENT OF SEDIMENTATION OR FRAC-OUT

For the installation of utilities under watercourses using directional boring methods

INTRODUCTION

Although directional drilling is a much less intrusive method of crossing than open-trench cutting, there is a possibility of surface water disturbance if a "frac-out", or inadvertent return of drilling fluid or sediment laden groundwater occurs during the drilling process. There is also the potential for sediment-laden water or other deleterious substances to enter the watercourse as the result of dewatering efforts or other construction related activities during directional boring.

Frac-out releases are typically caused by the pressurization of the drill hole beyond the containment capability of the overburden soil or sediment. Therefore, the type of material and the depth of overburden is a key factor in preventing a frac-out.

Although a frac-out can occur at any location along the directional bore, it is most probable where the drill head is the shallowest. As a result, the possibility of a release occurring is significantly lower with deeper bores.

The impact of sediment entering the watercourse is a temporary increase in turbidity or siltation that can impact aquatic life, and may be a violation of the following sections of the Canadian Fisheries Act:

CANADIAN FISHERIES ACT

Fisheries Act - Subsection 36(3) - No person shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish.

Fisheries Act - Subsection 35(1) - Harmful alteration, etc., of fish habitat. – No person shall carry on any work or undertaking that results in the harmful alteration, disruption or destruction of fish habitat.

The purpose of this Emergency Response plan or "Frac-out" plan is to:

- Minimize the potential for a frac-out associated with HDD activities.
- Provide for the timely detection of frac-outs.
- Protect areas that are considered environmentally sensitive (streams, wetlands, rivers).
- Ensure an organized, timely, and "minimum-impact" response in the event a frac-out and release of drilling mud occurs.
- Ensure that all appropriate notifications are made in the event of a "Frac-out" to the owner,

to the GNWT Environment and Natural Resources Department, the MVLWB, and to Fisheries and Oceans Canada.

3.0 THE PLAN

- Prior to the start of construction, conduct a briefing for all workers to identify and locate sensitive areas at the site
- Ensure that all field personnel understand their responsibility for timely reporting of frac-outs
- Maintaining necessary response equipment on-site or at a readily accessible location and in good working order. This may include a vacuum truck, sandbags or hay bales, an underwater boom and curtain.

A “Frac-Out” is Identified:

- All work stops, including the recycling of drilling mud/lubricant.
- Determine the location and extent of the frac-out.
- Immediately contact the appropriate organizations including the consultant, owner of the facility and the closest regional office for Fisheries and Oceans Canada (Regional offices are listed in Appendix A of this document).

If the Frac-out is Terrestrial:

- Isolate the area with hay bales, sandbags, or silt fencing to surround and contain the drilling mud.
- Either use a vacuum truck to pump the drilling mud from the contained area and place it in the return pit or:
 - leave the drilling mud in place to avoid potential damage from vehicles entering the area and once dry, remove the excess drilling mud, level the area and reseed if necessary.

If the Frac-Out is Under Water:

- Monitor frac-out for 4 hours to determine if the drilling mud congeals. (Bentonite will usually harden, effectively sealing the frac-out location).
- Upon consultation with the governing authorities, take the appropriate action to resolve the problem.

This could be:

- If drilling mud congeals, take no other action that would potentially suspend sediment in the water column.
- If drilling mud does not congeal, erect isolation/containment environment (underwater boom and curtain).
- If the fracture becomes excessively large, a spill response team would be called in to contain and clean up excess drilling mud in the water. Call ROHL Global head office to arrange for this service.

After frac-out is stabilized and any required removal is completed, document post-cleanup conditions with photographs and prepare frac-out incident report describing time, place, actions taken to remediate frac-out and measures implemented to prevent recurrence.

An Incident Report will be provided to the facilities' owner, to Mackenzie Valley Land and Water Board, to GNWT Environment and Natural Resources, and to Fisheries and Oceans as soon as it is complete.

Contact Information in the Event of a Frac Out:

Fisheries and Oceans Canada – Yellowknife Office 867.669.4900

Mackenzie Valley Land and Water Board, AlecSandra MacDonald, Regulatory Specialist- 867.777.4954

GNWT Environment and Natural Resources- 867.920.8130

ROHL Project Manager, Gary Seed – 867.332.8124

Yukon Government Project Manager, Darryl Froese - 867.334.7900

Stantec Project Leader, Warren McLeod- 867.920.2882 ext. 238

4.0 STRATEGIES

The following strategies minimize the effects of directional boring and the impacts that could result should a frac-out or sedimentation occur:

- Select low flow times for the directional bore timing
- Maximize distance of entry and exit holes for drilling from mature riparian vegetation
- Maximize distance of entry and exit holes for drilling from the bank of the watercourse. The entry and exit holes should be excavated as per buffer zone requirements and far enough away from any watercourse to allow containment of any sediment or deleterious substances above the ordinary high-water mark.
- When dewatering drilling holes, treat water or divert it into a vegetated area or settling basin to remove suspended solids to prevent sediment and other deleterious substances from entering the watercourse
- Since releases are caused by pressurization of the drill hole beyond the containment capacity of the overburden of material, maximize the distance between the bed of the river and the depth of the directional bore

Creeks and Streams

When directional drilling under a creek or stream:

- Rohl Global will temporarily suspend forward progress of the drilling operations if sedimentation is noted and the surface of the drill path will be examined for release.
- If a surface release has occurred, check effectiveness of the sediment barrier, make necessary repairs.
- Remove the sediment by shovel or vacuum truck. Ensure clean-up measures are suitably applied so as not to result in further disruption to the bed and/or banks of the watercourse.

Wetlands

When a suspected frac-out is identified or sediment-laden water or other deleterious substances enters the wetland while drilling:

- Rohl Global will temporarily suspend forward progress of the drilling operations and the surface of the drill path will be examined for release.
- If a surface release has occurred, isolate the area with sediment/silt fencing, hay bales, and/or sandbags to contain the spread of sediment.
- The sediment will be removed by the use of hand shovelling or the use of small mechanized equipment outside the wetland area.

Rivers

If a frac-out is suspected while drilling in the river:

- ROHL Global will temporarily suspend forward progress of the drilling operations if sedimentation is noted, and the water will be examined to determine the presence and/or extent of a sediment plume.
- Small aquatic releases with no visible sediment plume are allowed to dissipate since clean-up efforts in these cases could potentially result in increased suspension of sediments in the water column.
- The on-site construction manager will notify any appropriate downstream water intake authorities of the existence of any plume which extends beyond 500 metres downstream.
- In the case of a terrestrial release while drilling near the river, the procedures outlined in the terrestrial section of this plan will be followed.

Terrestrial/Shoreline Areas

When a frac-out is suspected while drilling in a terrestrial/shoreline area or there is the potential for sediment laden water or other deleterious substances to enter the watercourse from the shoreline area:

- The contractor will temporarily suspend forward progress of the drilling operations and the surface of the drill path will be examined for release.
- If a surface release has occurred or there is the potential for sediment-laden water or other deleterious substances from entering the watercourse isolate the area with hay bales, sandbags, or silt/sediment fencing to contain the spread of sediment-laden water and ensure that it does not enter the watercourse.
- The contained sediment area will be left in place to dry
- The dried sediment will be removed by shovel or vacuum truck to grade and the area restored as to its original condition.

5.0 SUMMARY OF GUIDELINES

Although each bore may have its own site-specific characteristics, ROHL Global will have the following general guidelines:

1. The proposed boring path will be reviewed prior to starting to alleviate any conditions which may result in a frac-out.
2. During drilling operations, the bore path will be continuously monitored and observed for signs of frac-out or surface migration.
3. Drilling fluid pressure and rate of return flow will be monitored and if loss is detected, drilling will cease operations until the problem can be rectified
4. If frac-out occurs under a watercourse, boring will cease immediately, and implement the plans contained in this document.

5. Material/Equipment required to control fluid loss will be site specific and contained in the drill plan for that bore. Some examples of containment methods could include hay bales, silt fence, fluid additives for drilling mud as well as mechanical methods.

I have received a copy of all relevant documents related to the **Small HDD Emergency Frac-Out Plan** for the **Dempster Fibre Project**. I have received answers to any questions and will complete the activities per the plan and as directed by ROHL.

[illegible]