



Enbridge Pipelines (Southern Lights) L.L.C.

**Drilling Mud Containment, Response, and
Notification Plan**

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TABLE OF CONTENTS

1.0	Introduction	1
2.0	On-Site Observation during Construction.....	1
3.0	Response to Inadvertent Releases	2
3.1	On-Land Locations.....	2
3.2	Wetland Locations	2
3.3	In-Stream Locations.....	2
4.0	Containment	2
4.1	On Land Locations.....	3
4.2	Wetland Locations	3
4.3	In-Stream Locations.....	3
5.0	Notification	4
6.0	Clean-up	4
7.0	Restoration and Post-Construction Monitoring.....	5

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1.0 Introduction

Construction of an Enbridge Pipelines (Southern Lights) L.L.C. (Enbridge) pipeline may include the use of a trenchless excavation method known as horizontal directional drilling (HDD). HDD is a widely used construction technique that accomplishes the installation of buried utilities with minimum environmental impact. However, HDD is not entirely without impact. The primary environmental impact potentially associated with HDD is the inadvertent release of drilling fluids/mud (water/bentonite mixture) to the surface during construction (sometimes referred to as “frac-out”). The objective of this plan is to provide procedures that will minimize the potential for release of drilling fluids/mud into waterbodies or onto the adjacent surface soils.

HDD is to be conducted in accordance with Enbridge’s Environmental Mitigation Plan (EMP). As such, HDD will be conducted in a manner to prevent inadvertent releases of drilling mud. This “Containment, Response and Notification Plan” elaborates on measures to be implemented if a release occurs despite prevention efforts. The plan is to be implemented as appropriate by the contractor under the supervision of Enbridge to contain, control and clean up any release of drilling mud during HDD crossings conducted during pipeline construction.

2.0 On-Site Observation during Construction

During construction of a directionally-drilled crossing, pipeline construction personnel will monitor the pipeline route throughout the process, as follows:

- On-site observation of the crossing area is to be conducted during active drilling with mud circulation;
- Construction observers will be briefed on what to watch for and will be made aware of the importance of timely detection and response actions to any release of drilling mud;
- Construction observers will have appropriate, operational communication equipment (e.g. radio, cell phones) available at all times during installation of the directionally drilled crossing, with the ability to communicate directly with the HDD operations control center;
- If the HDD operator realizes a sustained loss in fluid pressure or loss of circulation, the operator will immediately notify the construction observers of the assumed position of the drill head; and

- Construction observers will have the authority to order installation of containment structures, if needed, and to require additional response measures if deemed appropriate.

3.0 Response to Inadvertent Releases

In the event an inadvertent drilling mud release is observed during an HDD crossing, the release will be assessed to determine the amount of drilling mud being released and potential for the release to reach watercourses or wetlands. Response measures will vary based on location of inadvertent release as discussed below.

3.1 On-Land Locations

- Evaluate the release to determine if containment structures are warranted and if they will effectively contain the release.
- Order installation of containment as needed to prevent an uncontrolled release of drilling mud.
- Initiate immediate suspension of drilling operation if the mud release cannot be controlled until appropriate containment is in place.

3.2 Wetland Locations

- Initiate immediate suspension of drilling operation until appropriate evaluation and containment measures are completed.

3.3 In-Stream Locations

- Document and monitor release.
- Initiate immediate suspension of drilling operation.
- Review drill pressures, pump volume rates, and drill profile.
- Implement steps to contain inadvertent release material, advise regulatory authorities and further evaluate the current drill profile to identify means to prevent further inadvertent release events.

4.0 Containment

Containment, response and clean-up equipment will be immediately available at both sides of the HDD crossing location to assure a timely response. Equipment may include:

- straw bales
- silt fence
- plastic sheeting
- shovels
- squeegees
- pails

- push brooms
- pumps and sufficient hose
- mud storage tanks
- vacuum truck on 24-hour call
- light plant/generator

4.1 On Land Locations

- Deploy appropriate containment measures to contain and recover drilling mud as feasible.

- Remove excess mud at a rate sufficient to prevent an uncontrolled release.

4.2 Wetland Locations

- In the event of a mud release in a wetland area:
 - drilling operations are to be suspended immediately
 - notifications are to be made as per Section 5 below
 - the release is to be evaluated, and appropriate response and containment measures are to be deployed.

- If the amount of the surface release is not great enough to allow the practical physical collection from the affected area, it shall be diluted with fresh water and/or the fluid will be allowed to dry and dissipate naturally.

- If the amount of the surface release exceeds that which can be completely contained with hand-placed barriers, small collection sumps (less than 5 cubic yards) may be used to remove released drilling mud by the use of portable pumps and hoses.

- If the amount of the surface release exceeds that which can be contained and collected using small sumps, drilling operations shall be suspended until surface release volumes can be brought under control.

- Excess mud will be held within the containment area and removed using pumps or other appropriate measures at a rate sufficient to maintain secure containment.

- The mud will be stored in a temporary holding tank or other suitable structure out of the wetland for reuse or eventual disposal in an approved disposal facility.

4.3 In-Stream Locations

- Observer will document and monitor release.

- In general, containment is not feasible for in-stream releases. However, conditions are to be assessed as to whether hand-placed containment,

recovery or other measures, such as silt curtains, would be effective and beneficial at the specific release site.

- Drilling operations will not be suspended unless the releases pose a threat to human health and safety.
- Notification will be made per Section 5 of this plan.

5.0 Notification

For all drilling mud releases during HDD crossings, the Contractor will notify the Environmental Inspector (EI). If the EI determines the release affects wetland or in-stream areas, he or she will immediately notify Enbridge after discovery of the release. Upon notification from the EI, Enbridge will complete agency notifications, as appropriate.

If the notifications are necessary during non-business hours, voice messages will be left and the requirements of this plan will be implemented. Follow-up notifications will be made as soon as practicable in the next business day.

6.0 Clean-up

Clean-up measures will be implemented following mud releases in upland or in wetland areas. The following measures are to be considered as appropriate:

- Drilling mud will be cleaned up by hand using hand shovels, buckets and soft-bristled brooms as possible without causing extensive ancillary damage to existing vegetation. Fresh water washes are also to be employed if deemed beneficial and feasible.
- Containment structures will be pumped out and the ground surface scraped to bare topsoil without causing undue loss of topsoil or ancillary damage to existing and adjacent vegetation.
- Material will be collected in containers for temporary storage prior to removal from the site.
- Potential for secondary impact from the clean-up process is to be regularly evaluated and clean-up activities terminated if physical damage to the site is deemed to exceed the benefits of removal activities.
- In general, no clean-up measures will be initiated for in-stream releases. If site-specific conditions are such that containment and clean-up may be feasible and beneficial, fresh water washes or other low-impact steps may be employed without undue disturbance to the stream banks and bed.

Sealing and Abandonment of the Drill Hole

The following measures will be implemented in the event that drilling cannot continue along the designated drill path due to excessive leakage:

- Beginning from a point behind where the leakage occurred, the hole will be redrilled along a different alignment path.
- The initial drill hole will be abandoned if continued drilling along a new alignment is not possible. This will be accomplished by filling the hole with the bentonite slurry used for the initial drilling and plugging the surface opening with a cement grout.
- In case of abandonment an additional attempt at completing the horizontal directional drill may be made in proximity to the previous route. A new hole would be drilled in the same general area as the initial drill hole. No alternative crossing methods would be implemented (i.e. wet trench) without the proper agency notification and approvals.

7.0 Restoration and Post-Construction Monitoring

Following clean up, restoration and revegetation will follow in accordance with Enbridge's Environmental Mitigation Plan and Revegetation Plan. Enbridge will monitor the release site as appropriate to assure adequate restoration.