

## Appendix 11 - HDD Inadvertent Return Plan



## Horizontal Directional Drill Inadvertent Return Plan

**Project Name:**

Summit Carbon Solutions Midwest Carbon Express

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## 1 Introduction

In North Dakota, Summit Carbon Solutions, LLC (SCS) is proposing to utilize the horizontal directional drill (HDD) crossing method, a trenchless excavation technique during the construction of the Midwest Carbon Express Project. The HDD crossing method will be used to route the pipeline under obstacles including roads, railroads, waterbodies, and sensitive areas and result in minimal surface impacts.

SCS has prepared this *Horizontal Directional Drill Inadvertent Return Plan* (Plan) which outlines operational procedures and responsibilities for the prevention, containment, and clean-up of inadvertent releases associated with the HDD process. The objective of this Plan is to:

- Minimize the potential for an inadvertent release of drilling fluids associated with HDD activities;
- Provide for the timely detection of inadvertent returns;
- Protect environmentally sensitive areas while responding to an inadvertent release;
- Ensure an organized, timely, and “minimum-impact” response in the event of an inadvertent release of drilling fluids; and
- Ensure that all appropriate notifications are made immediately.

## 2 Drilling Fluid and Drilling Fluid System

The HDD process involves the use of water and bentonite (a naturally occurring clay) slurry as a coolant and lubricant for the drill head. The slurry also helps to stabilize the boreholes and aids in the removal of cuttings during the drilling process. Bentonite is a naturally occurring, non-toxic, inert substance that meets National Sanitation Foundation /American National Standards Institute 60 NSF Drinking Water Additives Standards and is frequently used for drilling potable water wells. Bentonite, however, if released into waterbodies, has the potential to adversely impact fish, fish eggs, aquatic plants, and benthic invertebrates if in heavy enough concentrations to cover the bottom with sediment.

The drilling fluid is prepared in a mixing tank containing both new recycled drilling fluid. The fluid is pumped at rate of 100 to 1,000 gallons per minute (gpm) through the center of the drill pipe to the cutters. Return flow is through the annulus created between the wall of the boring and the drill pipe. The cuttings are carried in this return flow back to either the entry or the exit pit, depending on a combination of elevation difference and drilling/hole opening direction.

Once in the receiving pit, the fluid moves to the pickup pit to be pumped to the fluid processing equipment. Typically, shaker screens, desanders, and desilters remove cuttings in a series of decreasing screen sizes to remove finer cuttings from the drilling fluid. The cleaned and recycled fluid is returned to the mixing tank and pumped for reuse in the borehole. Following completion of the drill, cuttings and the bentonite clay will be disposed of in accordance with applicable environmental regulations.

During HDD drilling, there is the potential for unintentional loss or seepage of drilling fluid into the native material through which the drill passes. In some cases, the drilling fluid may travel through natural fissures or loose soil to the surface resulting in what is commonly referred to as an inadvertent release or a frac-out.

## 3 Contractor Responsibilities and Requirements

The HDD contractor is responsible for execution of all aspects of the HDD operation, including actions for detecting and controlling the inadvertent release of drilling fluid. SCS will supervise the progress and actions of the HDD contractor through the use of onsite inspection teams.

The HDD contractor will be required to conduct the HDD operation with the types and quantities of equipment and materials necessary to clean up a release, which would typically consist of a tracked hydraulic excavator, straw or hay bales, stakes to secure bails, silt fence, sandbags, shovels, pumps, and any other materials or equipment deemed necessary. The contractor may also provide for a vacuum truck and operator to be on call during drilling operations.

Contractors will develop site specific plans for each HDD crossing, identifying any site-specific requirements and provisions to be made to meet site conditions.

Additional equipment that may be required during HDD operations include a light tower in case clean-up operations are needed after dark, a boat with relevant safety equipment during the crossing of large waterbodies and leak free hose to carry spilled drilling mud to containment for disposal.

## 4 Fluid Migration Detection

Drilling crews will be responsible for monitoring and detection of inadvertent releases. The most obvious signs of an inadvertent release are the visible pooling of drilling mud on the surface or a sudden decrease in drilling mud pressure or return volumes during drilling operations. Drilling and mud system personnel will continuously monitor drilling pressure and return volumes, and immediately report reductions or anomalies to the Drill Inspector.

## 5 Corrective Action for an Inadvertent Release

In the event of inadvertent release to the surface or body of water at locations other than the borehole location, the following actions will be taken:

- Notify the Drill Inspector, who will contact the appropriate SCS representatives;
- Suspend active drilling operations;
- Search for releases;
- Determine the volume of lost fluid;
- Contain any drilling fluid inadvertently released;
- Evaluate the circumstances leading to circulation loss to determine if the fracture and pathway can be sealed. This shall include a review of the annular pressure history during the drill;
- In the event of partial circulation loss, pumping of drilling fluid may be reduced to reduce pressure and materials or Lost Circulation Material may be added upon SCS approval;
- Once confined, the contractor will pump the release into tanks or trucks for disposal;
- Measures will be implemented (e.g., berms, silt fences, hay bales) to prevent silt laden water from flowing into the water body;
- If hand tools cannot contain a small on-land release, small collection sumps may be constructed to pump the released material into the mud processing system; and
- Sump pumps or vacuum trucks will be used to remove and dispose of any drilling fluids if they can reasonably reach the release without further environmental impact.

## 6 Containment of Drilling Fluid Release

Immediately following the detection of the inadvertent drilling fluid release, containment, and clean-up operations shall commence. For releases on land, Contractor shall use straw bales, silt fences, sandbags, and earth berms to prevent fluid from migrating or flowing from the immediate area of the discharge. If the volume released is too small for containment measures or if the release occurs in an environmentally sensitive area where construction of

containment measures can cause additional damage, the release will be allowed to dry naturally if there is no potential for migration into a waterbody.

For releases in shallow water, the HDD contractor shall install staked sediment barriers as described in the Project's Environmental Construction Plan. Removal by vacuum truck may be attempted if deemed appropriate. The decision to proceed with the drilling operation will be at the sole discretion of the SCS representative after all methods to seal off the location of the discharge have been attempted. Underwater releases may be allowed to dissipate where clean-up would cause more damage than leaving the material in place. Where clean-up can be accomplished without causing additional damage, the clean-up of the spill will be conducted.

## 7 Clean-up of Releases

The cleanup shall commence after the release is contained. Clean-up shall include removal of all visible drilling mud located in accessible areas. Removal methods will vary based on the volume of the release and the site-specific conditions. Removal equipment may include vacuum trucks, loader and track hoe equipment, small pumps, shovels, buckets, brooms, and squeegees. If the release occurs in a sensitive area, the released drilling fluid will be cleaned up and the release area will be restored as close to the original condition as feasible. It may be necessary to store the released mud on-site prior to disposal.

## 8 Agency Notification Procedures

A release will be reported first to SCS, who in turn, will notify responsible agencies, as required.