ENERGY TRANSFER

HORIZONTAL DIRECTIONAL DRILLING

Horizontal directional drilling (HDD) is a less impactful method to install underground pipes rather than digging an open trench to bury the pipe. The use of this method greatly reduces the environmental impact and disruption to roadways and other existing infrastructure during construction. HDD construction also improves the safety and protection of the pipeline from potential third-party damage once in operation due to the additional depth that can be achieved.

HDDs are used to install pipelines underneath waterways, wetlands, road crossings and congested neighborhoods.

HDDs are also used for water and sewer pipes, telecommunication and fiber optics, electric conduits and environmental remediation.

MATERIAL USED DURING HDD PROCESS

"Drilling mud" is commonly used during HDD operations. This mixture consists predominantly of water that must adhere to safe drinking standards and naturally occurring clay called bentonite. The drilling mud is used during the HDD process to keep drilling tools cool, to remove drilled material, to support the drilling hole, and to lubricate the drill bit and the pipe during the final stages of pulling the pipe.

During an HDD, drilling mud can rise through preexisting cracks in the soil to the surface. This event is frequently referred to as an "inadvertent return." These discharges are a potential occurrence in the course of HDD activity, and do not typically result in long-term impacts to the environment.

In most cases, the drilling fluid composition ranges between **2% and 15% bentonite clay** and between **85% and 98% water,** depending on the specifics of the particular drill.

The same bentonite used in the HDD process can be found in everyday household products, such as hand soaps and lotions, and is used in the clarifying process in winemaking and home brewing. Bentonite is also listed by the U.S. FDA as a 'Generally Recognized Safe Food Substance' when used as a processing aid, and serves a number of other practical uses such as adhesives, medicines and paint.

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"HDD is less disruptive on the existing environment than any conventional open-trench operations."

– Interstate Natural Gas Association of America

MITIGATION AND REMEDIATION MEASURES

Before construction can begin, the company is required to have a thorough HDD response plan on file with the governing regulatory agency. If at any time during the drilling process an inadvertent return is suspected, the construction team will immediately work to contain, remove and recycle any drilling mud that is released during HDD activities. The company would then notify the appropriate regulatory agency involved and work toward complete remediation of the affected areas.

THE HDD METHOD TO INSTALL PIPELINES INVOLVES THREE STAGES

Pilot Bore Drilling

A computer-controlled drilling bit is steered along the planned route.

Reaming

A reamer replaces the drill bit, enlarging the borehole diameter. During this stage, soil is removed hydraulically and mechanically. Water and bentonite are used during hydraulic excavation.

Installation

The prefabricated line is pulled back from the exit point into the cleaned borehole to the entry point to complete installation.

"The bentonite that is used in the drilling mud is commonly used in many different applications such as water purifying or used as a base layer in makeup."

– Brigham McCown, former federal regulator and pipeline expert

Horizontal Directional Drilling