

PUREGOLD® CLEANDRILL - BIODEGRADABLE DRILLING FLUID USED IN HORIZONTAL REMEDIATION WELL



PROJECT DETAILS

Bloomington Manufactured Gas Plant
Horizontal Remediation Well

Northern Illinois Gas entered into an agreement with the Illinois Environmental Protection Agency (IEPA) to construct a horizontal remediation well at the former site of Bloomington Manufactured Gas Plant (MGP).

LOCATION

Grand Rapids, MI

The remediation well was required because the Bloomington Housing Authority chose the site for wits new parking lot and maintenance facility. When the Housing Authority learned that the manufactured gas had been produced there from 1883 to 1951 via coal carbonization and carbureted water gas processes, it contacted the EPA.

PRODUCTS USED

PUREGOLD® CLEANDRILL

As the IEPA looked into the project it discovered a coal/tar byproduct in the water bearing sand and gravel layer at the site.

After discovering the free-phase Non-aqueous Phase Liquid (NAPL) in the sand and gravel layer at the site, Black & Veatch Special Projects Corporation Chicago, developed a unique recovery system. In an effort to recover the NAPL from the coal/tar byproduct, Black & Veatch devised a method of using a single, horizontal well for a free-phase recovery system. In doing so, the consultant learned that the site's geology was comprised of clay/silt underlain by a sand and gravel layer, which rested on impermeable clay-till. Black & Veatch P.E. Larry Milner determined that one 360 foot horizontal well would be required, eliminating the need for numerous vertical recovery wells.

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Mateco Drilling Co., Grand Rapids MI, conducted the installation using a 400 TX bor-mor® drilling rig. A 2 3/8" drill pipe with a 4 1/2" drill bit was used to drill the pilot hole.

The well had to be installed in the largest depression and placed within the sand and gravel layer just above the clay-till, with the entrance and exit points both on site. According to Dale Elliot with Mateco, "This was a tough project because the bore's curved path had to be precisely guided through subsurface obstructions."

Elliot added, "The right drilling fluid was vital in successfully installing the well." Improper drilling fluid selection and mixing can lead to borehole failure and cost overruns, not to mention a recovery well that doesn't perform due to clogged screens. In addition, using the right fluid for the soil conditions are important factors in any horizontal directional boring project. The ideal drilling fluid needs to mix and disperse easily in a wide range of make-up waters. It must also achieve gel strength and viscosity required to maintain borehole integrity in the loose sand and gravel formation. And finally, the fluid needs to displace cuttings and maintain the wall of the bore, while lubricating the material as it is pulled through the hole.

Elliot selected PUREGOLD CLEANDRILL, a mixture of organic viscosifiers developed by CETCO Drilling Products. The drilling fluid is specifically designed for special conditions associated with horizontal directional remediation wells in the environmental market. PUREGOLD CLEANDRILL is also biodegradable and it breaks down naturally.

As the project progressed, PUREGOLD CLEANDRILL proved successful. It cooled the drill bit and radio beacon inside the drilling head decreased the filtration rate within the sand and gravel formation, and also preserved the porosity and permeability of the formation so that contaminants could enter the screened zone of the recovery well.

According to Mateco's Elliot, "The horizontal well allowed us the freedom to access the impacted areas without interrupting surface operations, and PUREGOLD CLEANDRILL allowed for easy drilling of the pilot hole and pullback of the well screen." He noted, "The last thing a contractor wants to be concerned with is his drilling fluid – PUREGOLD CLEANDRILL performed in the field the first time, and more importantly, the recovery well performed up to expectations."

Drilling Fluids used in utility directional drilling are not suitable for environmental projects because they can clog slots in the well screen and leave residual coating on the borewall, preventing the contaminants from entering the recovery well. PUREGOLD CLEANDRILL is specifically designed for use in the drilling operations where clay-based drilling fluids are restricted.

PUREGOLD CLEANDRILL is available through our nationwide network of distributors. For more information on this and other products designed for the waterwell, environmental, horizontal directional drilling and mining industries, contact CETCO Drilling Products today.