



Drilling Shaft Water Treatment

The Challenge

An environmental construction company and general contractor specializing in the installation of below ground pipelines and horizontal mining, were awarded the task of constructing a 60 mile potable water pipeline (48" diameter) from the city's Water Treatment Facility. The construction company was to provide 35' diameter down-shafts on the north and south banks of the one river and east and west shores of another river for subsequent installation of the pipeline below the two rivers. One to two 4" submersible pumps (500 gpm) were used to pump-out water from each flooded shaft. Shafts were flooded on purpose to suppress explosive blasts as well as the water that enters due to occurring through fissures in the rock of the down-shafts during excavation. A 40 mg/L total suspended solids (TSS) permit limit was issued for this project by the Wisconsin DNR, limiting the liquid residuals to be discharged to any surface receiving systems. Initial residuals containment technolo-

gies included 15-cy filter bags, construction-grade filter fabric installed throughout a settling bed of gravel, and other containment options (e.g., filter boxes). Unable to meet the 40 mg/L TSS discharge limit, an alternative method for containment and dewatering was sought by the project manager, which not only reduced the costs associated with residuals processing but required less resources to operate. WaterSolve was tasked to evaluate the sites for chemical conditioning programs and subsequent application of Geotube® containers for containment and dewatering of residuals.

The Solution

WaterSolve, LLC identified a dual polymer chemical conditioning program and recommended Geotube® Containment and Dewatering Technology, as a cost effective and efficient method for handling residuals in the shortest amount of processing time. Geotube® containers, which are manufactured from high strength polypropylene fabric,

Inside this issue:

Location:

Wisconsin

Products:

TenCate™ GT500D

Geotube® Containers

Solve 216C polymer

Equipment:

Make-down unit

Mixing Manifold

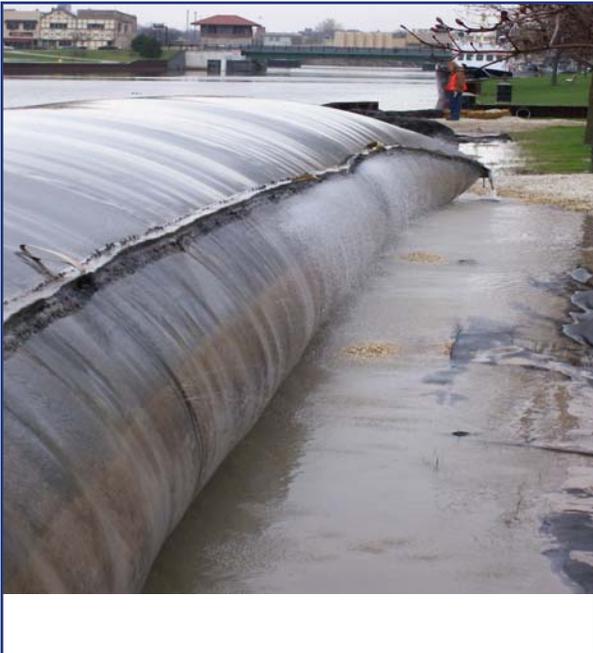
Sample and injection ports



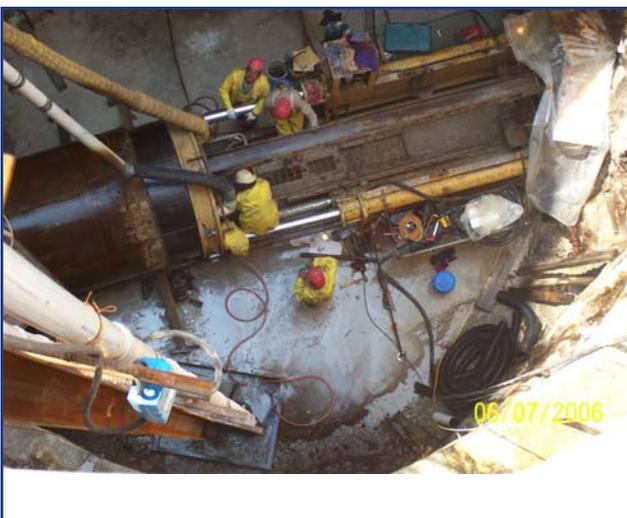
are designed to allow effluent water to escape through the pores of the fabric while retaining the solids. A bermed lay-down area with clean rock at each site was constructed to contain the Geotube® container. A dewatering performance trial was performed to determine the most effective chemical conditioning program. Dewatering polymers were evaluated based on water release rate, water clarity, and flocculant appearance.

The Result

With this technology, they were able to contain and dewater a full year of residuals production into one Geotube® container at each site and minimize the excavation and hauling costs. WaterSolve completed installation of the Geotube® containers, temporary piping, and polymer make-down unit in April 2006. Liquid residuals (500,000 gallons) at 0.5-1.0% solids were chemically conditioned with Solve 216C and pumped daily into the Geotube® container. As a result of WaterSolve's site specific chemical conditioning program, filtrate from Geotube® container technology met state discharge permit limits and allowed for continuous operation of all three drilling sites for the term of this project.



The 30'x90' and 30'x50' Geotube® containers were installed to contain and dewater 8 months of drilling residuals with less than 40 mg/L TSS in the filtrate. A key element in the release of water from drilling residuals is proper polymer mixing and injection to provide good chemical conditioning.



A 30'x50' Geotube® container on a barge in the river is pumped periodically to a height of 6' to dewater and consolidate drilling residuals from an under river pipeline project.

