



The area to be dredged. Photo taken from the inlet area, looking South toward the Fox River.



The chemical conditioning was verified periodically with jar tests. From left to right; the raw residual, the conditioned residual, and the filtrate collected from the containment area.

Background

WaterSolve, LLC was awarded the contract for removing residuals from a portion of a wastewater lagoon at a large pulp and paper mill in Wisconsin. Large amounts of solids continued to accumulate in the inlet side of a large primary lagoon. Based on preliminary measurements, it was estimated that 9,200-c.y. of residual was to be removed.

In the past, the solids were removed mechanically and allowed to dewater by gravity. The excavator could not reach the entire area, leaving a large amount of residuals in the lagoon. The solids did not dewater effectively, making the handling and hauling very difficult. This prompted the pulp

and paper mill utility personnel to evaluate alternate residual removal and dewatering methods.

Project Implementation

The scope of work was to remove and dewater the material that was inside a temporary barrier while not disturbing the side slopes. The dewatering pad was constructed at a location adjacent to the lagoon. Mobilization to the site began on June 18, 2010. The project was completed on June 28, 2010.

WaterSolve, LLC provided the Geotube® containers, Geotube® filtration fabric (GFF), liner, chemical feed equipment, and personnel to operate the chemical feed system. Infrastructure Alternatives, Inc. (IAI) was responsible for dredging, Geotube® container

dewatering, dewatering pad preparation, as well as piping the material from the dredge to the Geotube® containers. Ashland Hercules Water Technologies (Ashland) provided the required chemicals. Ashland personnel were on-site to provide assistance as necessary.

Location: *Wisconsin*

Products: *TenCate™ Geotube® Containers
Amerfloc 490 Organic Coagulant
Drewfloc 2433 Flocculant*

Equipment: *Polymer Make-down Unit*

Geotube® Container Sizing

Geotube® containers are manufactured from high strength polypropylene fabric and designed to allow effluent water to escape through the pores of the fabric while retaining the chemically conditioned solids.

Chemical Conditioning Program

WaterSolve, LLC completed a Dewatering Trial Performance on March 4, 2010 to determine the most effective chemical conditioning based on a composite sample obtained from the project site. WaterSolve, LLC also performed an on-site Geotube® Dewatering Test (GDT) on March 8, 2010.

The results of this testing were presented in a report.

The Result

The dewatering and consolidation of the residuals in the Geotube containers was even greater than anticipated. The paper mill personnel were extremely pleased with the results of the dredging and dewatering project.



The chemical feed system is shown here. Two LMI metering pumps fed the Amerfloc 490 into the dredge line prior to the Drewfloc 2433, which was made-down and injected with a polymer make-down Unit.



Water (filtrate) released from the Geotube® containers.



This photograph was taken from the Thilmany plant after the dredging operation was complete. In the foreground is the lagoon and in the background is the Fox River.



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