

**application**    **Pulp & Paper Sludge Dewatering**

**location**        **Stora Enso, Niagara Mill, Wisconsin**

**product**         **Geotube® Containers**

The Stora Enso, Niagara Mill, was established in 1889. Niagara Mill uses 7,500,000 gallons per day of water from the river to make pulp & paper. The removal of the solids is accomplished by treating it with alum, then a flocculent, allowing the solids to settle out in a 2,000,000 gallon setting tank system. This tank requires yearly cleaning to ensure quality water for the paper making process and performance of equipment on the bottom of the tank.

#### THE CHALLENGE

This yearly event is critical to ensure quality process water is available in making the high quality pulp and paper. The mill needs to empty the entire 2,000,000 gallon tank that contains approximately 60,000 to 80,000 pounds of solids. The solids need to be consolidated as much as possible to reduce disposal cost. Historically, the tank is decanted to the river, ensuring the solids level is well within permit levels. The sludge was then slowly flushed and washed to the clar-

ifier for retreating then sent to the primary solids pressing area, which is not designed for alum sludge. This procedure increased chemical cost, caused upsets in the clarifier and pressing systems, and created time restraints due to low flows to prevent upsets. An alternative to handling the alum sludge was needed. Emptying and cleaning the tank and removal by truck to an off-site processing facility would be extremely costly, and could not be accomplished in the short downtime period.

#### THE SOLUTION

Steven Lewens, operations coordinator for Stora Enso, selected Geotube® technology to contain and dewater the 2 million gallons of alum sludge that was pumped from the settling tank. This would accomplish their immediate need of containing the solids, discharging water within their permit limits, all while reducing downtime and at a significant cost savings. They were able to completely flush and clean the tank out in record time,

without sending high solids loads to other areas, allowing plenty of time for maintenance work in the tank. An on-site chemical was added to the feed solids to ensure low filtrate solids and faster dewatering. Upon testing the Geotube® filtrate, the solids were so low that they are able to send the filtrate directly to the river instead of the clarifier, reducing the loading on other treatment areas. The Geotube® has the capacity to contain several years of alum sludge settling from the tank clean-outs. The Geotube® will be allowed to sit over winter which greatly enhances the dewatering process. When the solids in the Geotube® are removed, they will actually be at an even higher percentage than the older process, further reducing hauling and landfill cost.

JOB OWNER:  
**Stora Enso, Niagara Mill**

ENGINEER  
**Steven Lewens**

CONTRACTOR:  
**Stora Enso**



Geotube® technology allows for easy field installation.



Operations Coordinator, Jeff McCulloch, inspects the dewatering degree of the Geotube® container.

## PERFORMANCE

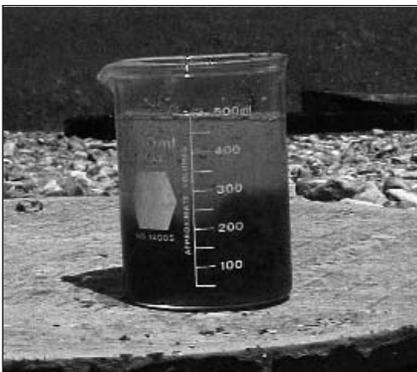
Geotube Dewatering technology, contained over 99% of the Total Suspended Solids (TSS) with filtrate BOD of around 7 mg/l, permitting direct discharge without using other mill treatment areas as practiced in the past. Steven Lewens, coordinated the installation, set up, and operation of the Geotube Dewatering process. Chemical consumption was at approximately 50% of historic usage when compared to the clarifier and pressing area. Geotube® technology is giving Stora Enso, Niagara Mill, the latest containment and dewatering technology at reduced cost, enhanced benefits, while ensuring an environmentally friendly solution.



Fast and easy installation exceeds expectations.



Clean filtrate flows from Geotube® while filling.



Solids going into the Geotube® container is about 9,000 mg/l.



Sludge from inside the Geotube® immediately begins to dewater.



Resulting filtrate weeping out of the Geotube® container at about 8 mg/l permitted the filtrate to discharge directly to the river.

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