



# ENVIRONMENTAL WATER TREATMENT SOLUTIONS

**WaterSolve**  
LLC

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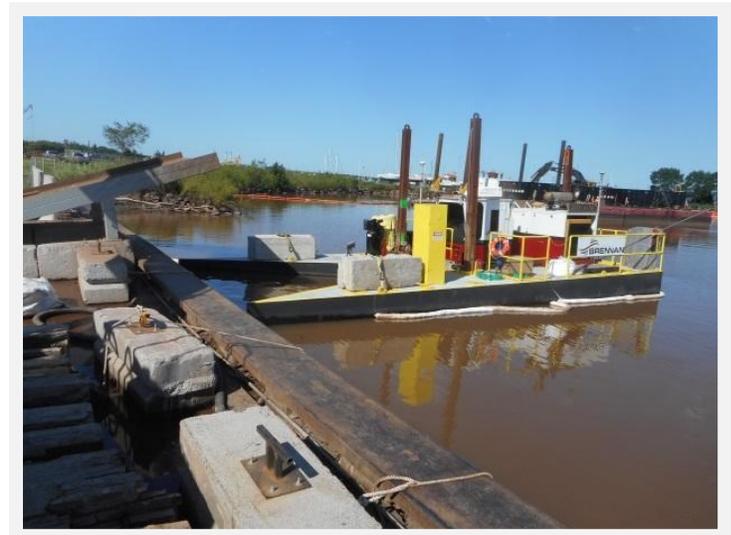
## ***Coal Residual in Lake Superior Requires Dredging to Geotubes®***

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The jar on the left is the residual untreated. The jar in the center is treated with the Solve 426 and Solve 161. The clear jar on the right is the filtrate water coming out of the Geotube® containers.

This hydraulic dredge had a special cutterhead that vacuumed the floor of the lake to collect the silt. It pumped 500-gpm for this project.



### **The Challenge**

Coal residual had made its way into Lake Superior years ago at a coal processing plant. The main portion of the material was mechanically dredged from the lake. A hydraulic dredge was then used to vacuum the floor of the lake to collect any remaining residual. The objective was to pump the residual to Geotube® containers to collect the solids and dewater them for treatment and subsequent hauling to a landfill.

### **Chemical Conditioning**

A sample of the anticipated material was sent to the WaterSolve lab prior to the project. After rigorous testing Solve 426 (a coagulant) followed by Solve 161 (a flocculent) were determined as the most effective treatment to capture and dewater the solids in this material.



The Geotube® containers are on a paved pad and are filling slowly.



Two LMI pumps were plumbed into the polymer feed system in the WaterSolve trailer to deliver 3-ppm of polymer to the dredge pipeline.

### **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. There was a paved area at the site ideal for a dewatering pad. The pad allowed for 80' circumference Geotubes® 43' and 57' long. The contractor requested two 43' and two 57' Geotube® containers for the quantities of material estimated for the project.

### **The Result**

WaterSolve was contracted to provide the Geotube® containers, polymer, polymer feed system, and a technician to apply the polymer for the project. A 6" HDP dredge pipeline transferred the residual from the dredge to the Geotube® pad. WaterSolve provided the 6" mixing manifolds, sample ports, valves, hoses, and fittings to inject the polymer and place the treated material in the Geotube® containers. The dredge operated at 500-gpm. A special cutterhead designed to vacuum was placed on the dredge to suck the silt from the floor of the lake. The WaterSolve technician helped deploy the system and then adjusted the feed rates of the polymer once the dredge was pumping. The solids were very low throughout the project. The dose was typically below 3-ppm for the Solve 426 (a coagulant) and Solve 161 (a flocculent). A water treatment plant at the site treated all the water released by the Geotube® containers. It was very important not to over-feed the polymer and keep it out of the water treatment plant.

The project came off beautifully. The solids were collected in the Geotube® containers and they dewatered very well. No residual polymer was detected in the water treatment plant. All those involved in the project were very pleased with the outcome.