



## Environmental Cleanup of a Portion of the Grand Calumet River

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### Objective

An approximately one-mile long stretch of the Grand Calumet River, in East Chicago, Indiana, was to be dredged to remove contaminated sediment. The dredged material needed to be captured and dewatered before it could be transported to a landfill for permanent placement. WaterSolve, LLC was contacted to evaluate the residuals, recommend an appropriate chemical conditioning program, and test the effectiveness of using Geotube® containers for collecting and dewatering the material.

### Geotube® Container Dewatering

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. Based on the limited area available at this site, the Geotube® containers were filled in sequence and allowed to dewater for approximately seven to ten days prior to excavation. Once the dewatered material was removed, a new Geotube® container was placed, and the sequential operation continued.

### WaterSolve's Chemical Conditioning

A representative sample of the sediment was tested in January, 2011, at the WaterSolve, LLC laboratory in Grand Rapids, Michigan. Dewatering polymers were evaluated based on water release rate, water clarity, and flocculent appearance. In addition, dosing rate(s) were determined during bench-top dewatering experiments and recommendations provided during this phase of the program. During these evaluations, it was determined that a dual chemical treatment would be most effective.



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WaterSolve's trailer mounted Chemical Control and Tracking System was used to chemically treat the dredged material. The system automatically adjusts the chemical feed rates based on density and flow rate of the material. Percent solids, flow rate, chemical usage, and other parameters are constantly tracked and recorded.

**The Result**

WaterSolve LLC was contracted to chemically treat the sediment as it was dredged and pumped into Geotube® containers. WaterSolve's trailer mounted Chemical Control and Tracking System was plumbed into the dredge line. The automated system monitors density and flow rates, and continuously adjusts the chemical feed rate in response to both. A sample port provides visual samples of the material to determine if changes are needed to the polymer feed rate settings. If needed, adjustments are made either manually, or by remote control.

**WaterSolve's Chemical Control and Tracking System (WSCCTS)** provides continuous monitoring of flow rates, material density, chemical usage, system settings (lbs. per dry ton), and operating times. The data is monitored, recorded, and summarized in a daily report. This information can be used for monitoring project progress, scheduling deliveries, as well as tracking material quantities and chemical usage.



These Geotube® containers are full and will dry for several days before the material is handled.



After being allowed to dewater, the bags and material were loaded and hauled away to a landfill for permanent disposal.



This containment area has capacity for eleven 75' circumference by 200' long Geotube® containers. As the material dries, and the bags are excavated and removed, new Geotube® containers are placed and filled. This system allows for continuous dredging operations.