



Environmental Cleanup of lake in California

Objective

The objective of the project was to hydraulically remove contaminated lake sediment that contained high levels of hydrocarbons and metals, most notably lead. Sediment dewatering or solidification was required in conjunction with the removal for management or disposal of sediments. WaterSolve, LLC was tasked to provide a Geotube® dewatering system to handle 15,600 cubic yards of in situ sediment being dredged at an average slurry concentration of 10% solids and dewater it to paint filter dryness for subsequent haul off.

Chemical Conditioning

A representative sample of lake sediment was tested in August, 2012, at the WaterSolve, LLC laboratory in Caledonia, MI. Dewatering polymers were evaluated based on water release rate, water clarity, and flocculent appearance. In addition, dosing rate(s) were determined during bench-top experiments and recommendations were provided. During these evaluations, it was determined that a dual chemical treatment would be the most effective.



This hydraulic dredge dug the material from the lake and transferred it through an 8" HDPE pipeline to the Geotube® containers in the material handling area.



WaterSolve's CCTS (Chemical Control and Tracking System) was installed in a conex box along with the coagulant and flocculent.

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. A containment pad was designed to allow stacking three layers of Geotube® containers to make the most of the available space. Two phases were needed in the project to allow removal of the first phase Geotube® containers so the containment pad could be used again for the second phase.

The Result

WaterSolve LLC was contracted to chemically treat and manage the lake sediment as it was dredged into the Geotube® containers. WaterSolve's Chemical Control and Tracking System was installed in a conex box near the dredge line. The automated system monitors the density and flow rates, and continually adjusts chemical feed rates in response to both. A sample port was installed prior to the Geotube® containers to provide visual observation of the chemically treated sediment. Daily reports were generated to indicate chemical usage and quantities of the sediment pumped through the pipeline to the Geotube® containers, and ultimate production rates for the job. After each layer of Geotube® containers were filled, core samples were taken to test for percent dry weight solids and paint filter dryness.



The first layer of Geotube® containers was deployed and connected to the dredge pipe.



Due to space limitations, three layers of Geotube® containers were stacked in the material handling area.