



Michigan Oil Spill Cleanup

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Objective

A crude oil pipeline ruptured in Southwest Michigan causing the crude oil to make its way to a river. Some of the residual had to be dredged from the river and dewatered to capture the contaminants. WaterSolve was contracted to flocculate the residual as it was dredged from the river so it would consolidate and dewater in geotextile tubes. The objective was to remove the residual from the river, chemically treat it to aid in dewatering, pump it into geotextile tubes where it would consolidate, and then haul the solids to a landfill.

WaterSolve's Chemical Conditioning

A representative sample of the river sediment was sent to WaterSolve where a dewatering trial was performed to determine the best polymer treatment program. 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 to the general contractor during this phase of the program. Solve 426 (a coagulant) followed by Solve 137 (a flocculent) in a 1 to 3 dilution ratio was the recommended chemical treatment for this sediment. Extensive testing was completed with the contractors and engineer prior to the commencement of work.



Sample of river sediment before WaterSolve's chemical treatment.



The result after WaterSolve's chemical treatment.

The Solution

WaterSolve was contracted to provide the chemistry, chemical feed equipment, and the technicians to manage the chemical conditioning. Upon arrival at the site WaterSolve technicians assembled the polymer feed system to inject the chemistry into the 8" dredge pipeline. A ten gallon per hour chemical feed pump injected the Solve 426 (coagulant) directly into the pipeline. The Solve 137 (flocculent) was made-down (diluted) with a polymer make-down unit with a 10-gph polymer progressive-cavity pump and injected into the pipeline after the Solve 426. A sample port was placed in the pipeline to provide visual samples of the chemical treatment. Adjustments were made to the chemical feed rates based on these samples. A log of the hourly feed rates as well as the daily consumptions of each chemistry and notable changes was recorded and given to the contractor at the end of each day.

A second and third dredge was plumbed into the pipeline during the project to speed up the process as the contractor was under a major deadline. WaterSolve was able to treat the sediment from the dredges without any interruption to the project. The chemical treatment was excellent. Filtrate water exiting the tubes made its way to a sump and was pumped through a water treatment plant to capture any remaining contaminants prior to returning to the river. The residual in the tubes was dry enough to haul away a month after the last water was pumped to them. The contractor successfully completed the project before the deadline and the process was deemed a success.



The sample port was used to monitor the chemical conditioning. This sample shows excellent solids separation and water clarity.



This amphibious dredge captured the sediment and pumped it to the geotextile tubes.



This water treatment plant drew water from the sump and removed any remaining contaminants before sending it back to the river. The chemical feed equipment was located between the sump and the water treatment equipment adjacent to the dredge line as shown.



The river sediment dewatered in the geotextile tubes is being loaded and hauled away for disposal.