

DEWATERING IRON SEDIMENT AT A WATER TREATMENT FACILITY

USA



Geotextile tube container in place to accept slurry to capture iron sediment and allow filtrate water to escape back to the lagoon.

OVERVIEW

This municipal water treatment facility had a sediment vault that accumulated 18 inches of iron sludge over the course of 10 years, and it had to be removed in a timeframe of 5 hours in order to maintain water in the water tower for the village. A contractor was hired to vacuum the sludge from the vault and haul it to a wastewater lagoon site owned by the village. Trucks holding 5,300 to 6,500 gallons were used to transfer the iron sludge. WaterSolve worked with the village to prepare a containment site for a 99 cubic yard Geotextile Tube to receive the sludge and dewater it.

CHEMICAL CONDITIONING AND EQUIPMENT

Prior to the onset of the project, a dewatering trial performed by a WaterSolve technician determined Solve 137 was the best polymer for water release, clarity, and flocculation for this residual. The village manager determined a driveway between a lagoon and a building would be the best place to position a Geotextile Tube. There was adequate electricity and water to supply the WaterSolve Model 1000-V2 polymer make-down unit to be used in the project. The clean filtrate water could gravity flow to the lagoon without needing a pump.

GEOTEXTILE TUBE CONTAINER SIZING

Ten years prior to this clean out the village reported to have removed 28,000 gallons of the sludge. WaterSolve estimated 28,000 gallons of this residual would fit in a 30 ft. circumference by 50 ft. long tube. This tube would fit ideally on a driveway between the lagoon and the building.



PRODUCTS

- ✓ GEOTEXTILE TUBE CONTAINERS
- ✓ POLYMERS
- ✓ POLYMER FEED SYSTEM

APPLICATIONS & SERVICES

- ✓ ENVIRONMENTAL CLEAN UP
- ✓ DEWATERING
- ✓ COMPLETE SOLUTIONS
- ✓ TURNKEY PROJECT MANAGEMENT

THE RESULT

There were 4 truckloads containing 5,300 gallons unloaded into the Geotextile tube on the morning of the clean out for a total of 21,200 gallons. The iron sludge was thicker than expected. The sample used for the estimating indicated 2% dry wt. solids and a sample taken from the trucks was 3.9%. One truckload containing 6,500 gallons was stored for a week and then pumped into the tube when the tube had shrunk enough to hold it. This brought the total to 27,700 gallons. 2 months after the pour, we measured 26 cubic yards in the tube and it tested 17.5% dry wt. solids. The dewatering process had reduced the volume by approximately 80%. The sludge passed paint filter and was hauled to a landfill successfully. One barrel of the Solve 137 polymer was needed to flocculate the iron sludge slurry as it was pumped into the geotextile tube.



Vacuum Tanker Unloading its Contents

This vacuum tanker contained 6,500 gallons and it is sloped toward the front of the truck. We had the option to attach the hose at this end to empty the truck. The trucker reversed the vacuum pump and pressurized the tank to speed up the



Site Prepped for Slurry Transfer

The 4" green hose was attached to the trucks to transfer the iron sludge into the white mixing manifold where the made-down polymer was injected. Plastic was attached to the building to keep any filtrate from getting on the building.



Removing Sediment from a Filled Tube

60 days after filling the tube, the material is removed and hauled to a landfill. It tested 17.85% dry wt. solids and passed the paint filter test. The dewatering process successfully reduced the volume of iron sludge by 80%.

