



Dewatering Iron Backwash Residuals in Settling Basin

Volume 280

September 2010

Objective

Facility managers at this water treatment plant decided to use Geotube® dewatering technology as they pumped and cleaned the iron backwash residual from their settling basin. The objective of this project was to process and dewater the iron backwash residual to pass a paint filter test for subsequent hauling to a landfill. The managers liked the simplicity and low overhead cost of the system. A sample of the iron residual was tested in the facilities lab by a WaterSolve, LLC technician and tests revealed this would be a good application for Geotube® dewatering technology. A Geotube® container was evaluated via a full-scale pilot study in September of 2010 to manage residuals from the settling basin as a cost effective dewatering method.

WaterSolve's Chemical Conditioning

A representative sample of the iron backwash sediment was tested by a WaterSolve technician prior to the project. 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 facility during this phase of the program. Solve 9330 was the recommended polymer for dewatering this residual in Geotube® container.

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 Geotube® estimator indicated 90,000 gallons of the 6% dry wt solids drying down to 15% would be dewatered and stored in a 45' circumference by 57' long Geotube® container.

The Result

WaterSolve LLC was contracted by the facility to dewater the iron backwash residuals into a 45' circumference by 57-ft long Geotube® container placed on a 3" bed of sand to allow water to escape from the bottom of the tube. A polymer make-down unit and mixing manifold were plumbed into the 3" feed-line in which a Godwin pump drew the backwash residual from a hydrant connected to the basin and transferred it to the Geotube®. A drum of Solve 9330 emulsion polymer was plumbed to the make-down unit. A sample port in the 3" pipeline near the Geotube® provided visual samples of the floc to determine changes needed to the polymer feed rate. The 45' circumference by 57' long Geotube® was placed on a level bed of sand prepared by the facility manager. The first material pumped from the basin was very thick and quickly thinned out when the initial surge was over. The basin had to be lowered 1' before an entry door could be opened to allow access to agitate the sediment. Facility workers agitated the sediment with a fire hose and water supplied from a nearby fire hydrant. A WaterSolve technician monitored the sample port in the 3" pipeline and adjusted the polymer make-down unit to optimize the chemical feed rate going to the Geotube® container. At 9:30am the pumping had started and at 6:30pm the facility manager was satisfied there was adequate solids removed from the basin. The entry door to the basin was closed and the facility returned to normal backwashing to the basin. There is adequate room remaining in the Geotube® container for further dewatering and the facility manager plans on using it again in a year or two when the basin is in need of dewatering.



Treatment Products, Solutions &
Services Through Science,
Engineering & Management

Location: Ohio
Products: TenCate™ Geotube® Containers
Solve 9330 Emulsion Polymer
Equipment: Polymer Make-down Unit
Mixing Manifold



This backwash settling basin in Ohio is being agitated and pumped to a Geotube® container for dewatering and subsequent hauling to a landfill.



A polymer make-down unit is plumbed to the mixing manifold in the 3” supply line exiting the basin on its way to the Geotube® container.



These jars represent the raw backwash water on the left, the chemically treated water in the center, and the filtrate water coming out of the Geotube® container on the right.



The Geotube® container lies on a level bed of sand for good drainage.

 **TENCATE**
Geotube®