



STONE QUARRY STORMWATER RETENTION BASIN

Volume 260

Spring 2006



The Challenge

The storm water retention basin at a Kentucky Stone Quarry overflowed its banks and flooded two adjacent mine shafts during the Spring of 2006. A site survey estimated that approximately 18,000 cubic yards of aggregate sediments at 40% dry weight solids had accumulated in the basin, decreasing its storage capacity by greater than 50%. The objective of this project was to dredge the storm water retention basin to its bedrock bottom and simultaneously increase the storm water retention basin's berm height by seven feet, to protect the shafts from future flooding events.

The Solution

It was calculated that 1,100 feet of 45' circumference Geotube® container would be needed to dewater and contain this dredge volume to greater than 60% solids. The resulting volume and mass of residu-

als at 60% solids would be 3,895 cubic yards and 3,960 tons, respectively. WaterSolve and the dredging contractor completed installation of the Geotube® containers, temporary piping, and the polymer make-down and feed equipment in October 2006. In order to maximize the containment and consolidation efficiency of the Geotube® containers, WaterSolve recommended that the facility re-fill the Geotube® containers at least three times in order to maximize their containment capacity and dewatering efficiency.

The dredging contractor and WaterSolve were contracted by the Kentucky Stone Quarry to dredge 18,000 cubic yards of aggregate sediments from their storm water retention basin and dewater the residuals in 1,100 feet of 45' circumference Geotube® containers located between the basin and storage shafts.

Inside this issue:

Location:

Kentucky

Products:

*TenCate™ Geotube®
Containers
Solve 9350*

Equipment:

*Polymer
Make-down unit
Mixing Manifold
Sample and injection
ports*



The dredging of the sediments in the storm water basin.



The filling of the Geotube® containers.

The Result

Sediments were chemically conditioned with Solve 9350 in-line with the polymer make-down unit and initially dredged into four Geotube® containers (45' circ. x 100' long) at 850 gpm over three days. As the first 100 feet of Geotube® container approached 75% solids capacity, two 45' circ. x 200' long Geotube® containers were brought online. The first containers were pulse-filled to capacity

and the remaining volume was pumped to the second set of Geotube® containers. Overall, dredging of this storm water basin required 370 gallons of Solve 9350, rental of a polymer make-down unit, 1,100 feet of Geotube® containers, and 2-weeks of dredging time to fill all Geotube® containers to 90 percent of dewatered volume capacity with greater than 85% dry weight solids.

