

## GEOSYNTHETIC CLAY LINER (GCL) PROVIDES SOLUTIONS FOR STORM WATER BASIN SINKHOLES

CETCO Geosynthetic Clay liners (GCLs) have been a popular choice as a component of the remediation of storm basins that have developed sinkholes. GCLs are manufactured hydraulic barriers consisting of high-swelling sodium bentonite clay bonded to geotextiles and/or geomembranes and are used for in a wide variety of liquid containment applications. GCLs are generally placed on the finished grade and then covered with a minimum of 12" of soil. As the GCL hydrates, the high swell of the confined sodium bentonite creates a high density, low permeability lining.

If severe irregularities are present in the finished grade, a geotextile cushion layer is placed first to prevent installation trauma to the GCL. Once deployed, the GCL is covered with 12" of soil which is then spread, compacted and then seeded.

CETCO offers GCLs in many different clay/geosynthetic combinations to meet any hydraulic performance requirements at the most cost efficient means. Other characteristics that make CETCO GCLs so popular are their self-healing properties (the high swell characteristics provide the ability to seal around penetrations that may occur through the GCL), and ease of installation (seams consist of a slight overlap with loose bentonite) that does not require any specialized or certified crews or equipment. CETCO GCLs are manufactured in large rolls and are not affected by freeze-thaw or wet-dry cycles like compacted clay.

## Geosynthetic Clay Liner (GCL) Provides Solution for Storm Water Basin Sinkholes



**Above:** Example of sinkholes that developed in the storm water basins.

**Above Top Insert:** GCL (Geosynthetic Clay Liner) composite profile.

**Above Bottom Insert:** Example of self-healing properties of GCL.

**Right Insert:** Modified installation apparatus allowed for simultaneous installation of geotextile and GCL.

**Right:** GCL and geotextile in place with cover soil being placed on top.

**Below:** GCL was placed into termination trenches at top of basin side slopes, then soil cover layer was placed.

**Below Insert:** Finished, re-vegetated storm water basin.

When three storm water basins in southeast Pennsylvania developed sinkholes, a CETCO Geosynthetic Clay Liner (GCL) was selected as a component of the remediation project. GCLs are manufactured hydraulic barriers consisting of high-swelling sodium bentonite clay bonded to geotextiles and/or geomembranes and are used for a variety of liquid containment applications. GCLs are generally placed on the finished grade and then covered with a minimum of 12" of soil. As the GCL hydrates, the high swell of the confined Sodium Bentonite creates a high density, low permeability lining.

The scope of the remediation project included the total area of three basins that was regraded to create one large basin. Because of irregularities in the finished grade, a geotextile cushion layer was placed first to prevent



installation trauma to the GCL. Once deployed, the GCL was covered with 12" of soil which was spread, compacted and then seeded. ACF's Fred Waite also provided on site technical assistance.

GCLs are available in many clay/geosynthetic combinations, and Bentomat® ST was chosen for this project to meet the hydraulic performance requirements with the most cost-efficient means. Other considerations in product selection focused on the self-healing properties of GCL (the high swell characteristics provide the ability to seal around penetrations that may occur through the GCL), and ease of installation (seams consist of a slight overlap with loose bentonite) that did not require any specialized or certified crews or equipment. Cetco GCLs are manufactured in large rolls are not effected by freeze-thaw or wet-dry cycles.