PRESTO | GEOSYSTEMS®

STRENGTH. FROM THE GROUND UP.

Since 1979

FEATURED CASE STUDY

GEOWEB® SLOPE PROTECTION SYSTEM EROSION CONTROL AT SOLAR FARM

Turf Reinforcement Mat

GEOWEB Geocells, Tendons, & ATRA Tendon Clips

Early Vegetation

PROJECT BACKGROUND

Spotsylvania Solar Farm, Virginia

When designing and constructing solar farms, erosion control and stormwater management must be considered to ensure long-term project success.

Such was the case at Virginia's Spotsylvania Solar Farm—the largest solar farm east of the Rockies. The solar farm spans approximately 3,500 acres, with the project site including an additional 2,000 acres preserved as undeveloped, conserved land. Once complete, the solar farm is expected to generate enough power to supply the equivalent of approximately 111,000 homes and offset 340,000 tons of carbon dioxide emissions each year. It is not surprising that a project of this scope posed some unique geotechnical challenges which required economical, long-term solutions.

CHALLENGE: Stabilizing a Slope Vulnerable to Erosion

Stormwater runoff is a concern during the development and operation of solar farms, especially large-scale operations like the Spotsylvania Solar Farm. To meet local stormwater regulations, the project required the construction of hundreds of retention ponds. The solar site included a sloped area that led into one of the larger detention ponds, and due to its location and large volume of runoff it had to handle, the slope required a permanent stabilization solution.

Located at the back of the site, the 2:1 slope that extended down into the stormwater pond was experiencing severe erosion. Situated next to an access road and downslope from a solar array, the slope failed several times, despite multiple efforts to stabilize the slope surface.

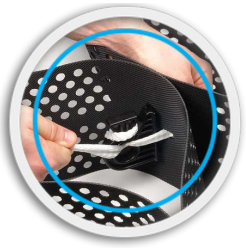
The solar site topography included a gradual decline over approximately 23 acres to the pond slope. Because of this, the slope's surface had to support a large volume of concentrated flow, with the neighboring access road causing the flow to gain velocity as it approached the area. Stone check dams and other traditional erosion and sediment control practices were not recommended because they would block the access road, which was needed for construction.

SOLUTION: GEOWEB® Slope Protection System

The contractor opted for the **GEOWEB Slope Protection System**, citing cost and performance as the major determining factors. The perforations in the GEOWEB system cell walls allow water to flow throughout the system if it reaches the area below the anchor trench, while the cell walls hold the soil in place, preventing the soil loss and gullies that resulted with the use of a TRM.

Another significant advantage to using the GEOWEB system is the ability to use on-site fill. Often solar projects are Net Zero sites that prohibit the use of imported fill. Additionally using on-site, low-quality fill often amounts to considerable overall project cost savings.

The GEOWEB GW30V6 (mid-size cell, 6-inch depth) system was securely installed over the 2:1 slope utilizing TP-225 tendons (woven polyester, 5100 lb. break strength) tied to a buried deadman pipe and the patented **ATRA® Tendon Clips**, which provide twice the pull-through strength of any other load transfer device. The ATRA Tendon Clips lock into the GEOWEB cell wall for the most secure connection on the market. Tendons secured with the locked components allow preassembly off-slope for easier installation.



ATRA® TENDON CLIP

After installation, the slope was hydroseeded and covered with a straw-coconut erosion control blanket. The GEOWEB 3D Slope Protection System provides a structurally stable environment for topsoil and sustainable vegetation through a structured network of interconnected cells. The GEOWEB system confines and reinforces the vegetated upper soil layer, increasing its resistance to erosive and sliding forces.