



Riverbank Protection

Retaining Wall & Slope Erosion Control

Los Portales, El Valle de Anton, Rio Guayabo, Panama, Republica de Panama

Case Study

Background:

The strong currents of the famous rebel Guayabo River at its highest point in the Anton Valley watershed almost destroyed a large area of privately owned land. Constant changes in the water levels has eroded the banks, causing ancient trees to fall helpless into the river's grasp. The construction of luxury residences "Los Portales" was suspended as the fight against nature seemed insurmountable. Traditional methods of erosion control had produced empty results as the river continued its path of destruction.



Los Portales, Rio Guayabo
(Pre-Envirogrid Retaining Wall and Slope Protection System)

Technical Information:

Materials Used EnviroGrid EGA306 6,500 m²
and Applications: (Retaining Wall)

EnviroGrid EGA304 1,000 m²
(Slope Erosion Control)

Project Length: February-June 2011 (5 Months)
12 man Crew



Los Portales, Rio Guayabo
(Completed project)

Problem and Objective:

Eventually it became apparent that traditional methods would not solve the problem of erosion. The owners of Los portales were faced with a decision. Either implement a novel technology to solve the erosion problems or abandon the entire residential project. Panaweb technicians got control of the situation at an extremely critical point in the process and suggested the Envirogrid cellular confinement system as a solution to the owners of Los Portales.



GeoCeldas 3D

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Design Solutions:

The Envirogrid geocells were utilized to create a monolithic system, comprised of retaining walls and slope protection, resistant to erosion above and below the natural river walls. The system reshaped the river banks to soften the course of flow and established proper drainage from the surrounding areas. Adjacent slopes were protected and the resulting system was vegetated to provide a long term solution.

Construction Overview:

The whole project was completed in the dry season. To begin, the riverbed was excavated to 1.5m below natural grade to allow for construction of a stable foundation resistant to the erosive forces of the river. Envirogrid layers, 6" tall and 5 cells deep, were stacked to build a 3 m high, 212 m long retaining wall. The layers below the natural river bottom were wrapped with a non woven geotextile to prevent undermining of the system. The front two cells of each wall panel were filled with lean concrete and the remainder were filled with local gravel and stones from the riverbed. The slopes above the wall were reshaped to 45 degrees and protected with Envirogrid panels, filled with local dirt from the site and vegetated immediately with a grass called Chorrerana. The few trees that remained at the river's edge were protected with individual retaining walls.

Results:

With the arrival of the strong rainy season in the Anton valley watershed, the river Guayabo ran its course with out inundating the surrounding area. Contractors were able to complete the residential project on time and restore the natural environment of the development. The owners of the property were ecstatic with the beautiful and functional results of the project. Flooding is now a thing of the past. The Envirogrid Geocell system was integrated flawlessly into the natural terrain while keeping the Rio Guayabo in its natural course.



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