

application

location

products

Erosion Control

Big Brown Mine, Fairfield, TX

Miramesh™ GR

THE CHALLENGE

The Big Brown Mine near Fairfield in eastern Texas has been a large source of lignite for TXU Energy since the early 70's. These mining operations typically are required to restore the mined lands to a quality as good as or better than their undisturbed state. Over the last several decades, the Railroad Commission has enforced more and more stringent specifications on remediation. Recently, the commission has moved away from conventional "hard" type erosion control structures such as flumes and concrete lined channels. Instead, they have turned to more "green" type erosion control solutions such as erosion control blankets and turf reinforcement mats. These green solutions provide a much more natural, pristine landscape suitable for native vegetation and aquatic and animal life.

The Big Brown Mine rests on large strata of very sandy soil, much like beach sand. These types of sands are highly erosive, allowing water to saturate and quickly move through the large void content. Coupled with rainfall commonly reaching intensities of more than 7.62 cm (3 in) per hour, personnel have struggled for years with various products and applications including straw mats, erosion control blankets, and even turf reinforcement mats. But surface treatment is ineffective in these soils because the water tends to migrate and erode beneath the surface protection and create seams that ultimately fail the system.

THE DESIGN

Supervisors at the mine turned to Lonestar Products, Inc. and Mirafi® Construction Products for help with a problematic channel experiencing

high erosion. Lonestar is a local distributor of Mirafi® geotextiles as well as other related soil erosion products. Since surface mats had been unsuccessful, a new idea was formulated using Mirafi® Miramesh™ GR. Miramesh™ GR is a woven polypropylene fabric with an open mesh typically used in vegetated steepened slopes. It has high strength for reinforcement, is colored green for aesthetics, and has optimum aperture openings that are tight enough to retain soil and moisture while also allowing enough light to penetrate for seed propagation.

CONSTRUCTION

The design called for a trenched gabion basket check dam lined with the Miramesh™ GR and then filled with seed-blended top soil. The top soil would effectively provide the dam, slowing the rushing water and



Workers install Miramesh™ GR lined gabion baskets in trench across channel.



The baskets effectively dam water, allowing sediment to drop out upstream.

allowing the sediment to drop out upstream. Post-construction, the Miramesh™ would prevent the top soil from escaping the baskets, all while aesthetically pleasing with its natural green color. Long-term, the grass will grow thick and full, creating a stable root network with the Miramesh™ fabric.

PERFORMANCE

The Miramesh™ lined gabion baskets have performed well, as expected, slowing the velocity of water and preventing erosion of the sandy soil. Grass has already begun to grow outward through the Miramesh™, creating a strong vegetated network that blends in with the native surroundings. The Railroad Commission has inspected and approved the gabion system. At last it seems there is a viable “green” solution for channel erosion at the Big Brown Mine.



Miramesh™ GR forms strong, stable network with vegetation.



Miramesh™ GR provides a “green” solution that blends with native vegetation.