



Case Study

application | Subgrade Stabilization
location | Terminal 5 Port of Portland
product | Mirafi® S1600

job owner | Port of Portland
engineer | Port of Portland
contractor | Rotschy, Inc.

TenCate develops and produces materials that function to increase performance, reduce costs and deliver measurable results by working with our customers to provide advanced solutions.

THE CHALLENGE

Located on the north edge of the Port's Rivergate Industrial District, Terminal 5 and its 185 acres feature a rapid-handling grain elevator operated by Columbia Grain Inc. In the fall of 1997, a \$48 million mineral bulk exporting facility began handling potash and other bulk commodities. Another Rail loop and access road around the facility was needed to handle the growing business of exporting the Pot Ash. Engineers were faced with the challenge of designing access for the greater than 100-ton railcars around the entire distance of the pot ash facility. To do this the Port of Portland engineers had to overcome the soft subgrade soils.

THE DESIGN

The Mirafi® S1600 nonwoven was chosen as a cost effective way to mitigate the very soft and wet silty sand soils encountered across the site. The design calls for placement of dredged sand to be compacted to a firm subgrade. Then the Mirafi® S1600 is placed below the rock base and quarry spawls for the new track alignment railway alignment. If any yielding areas are ob-



Aerial view of Terminal-5 pot ash exporting facility.

served prior to the placement of the railway ballast another layer of Mirafi® S1600 will be installed. The Port of Portland engineers have previously used Mirafi® products throughout the Port Facilities in an effort to mitigate the soft subgrade soils and to aid in controlling the wet weather conditions in the Northwest.

THE CONSTRUCTION

The site was brought to grade using dredged sand from the Columbia River. The Mirafi® S1600 was then placed over the compacted sand layer to provide both a separation layer, for the above rock and filtration layer to allow water to easily escape the large rock section



Placement of crushed rock base over the S1600.



Completed railway.

underneath the railroad tracks. After numerous proof-rolls using heavy construction equipment it was determined that the site was ready to carry the extremely large load of the exporting facility.

THE PERFORMANCE

The Port of Portland and the Potash exporting facility could not be more pleased with the performance of the S1600. As stated from the engineers, "Without the use of Mirafi®'s geosynthetics it would not be possible to design the subgrade for long term loads, in this area." Without the use of TenCate Mirafi® S1600 the rail subgrade would of had double the amount of crushed rock and still seen some settlement.

References:
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Placement of S1600 over wet subgrade soils.



New Rail alignment along the SE corner of the exporting facility.

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