

HOMER SOLID WASTE FACILITY, ALASKA

Challenging Alaskan landfill closure project



Industry: Waste
Sub-industry: Landfill
Location: Alaska
Product: **GSE® LL, BENTOLINER®, FABRINET®**

Overview

The Kenai Peninsula Borough in Alaska needed to complete phase two of a landfill closure project at its Homer Solid Waste Facility. This project comprised the closure of approximately 21,000 m² (226,042 ft²) of landfill using a geo-synthetic clay liner, and the installation of a drainage and landfill gas system. Qayaq Construction, the contractor, specifically selected Solmax's geosynthetics solutions due to their ability to address the highly challenging conditions at this site.

Challenge

Homer's subarctic coastal climate can be unpredictable, leaving tight windows for deployment. In addition, a road to the east of the landfill closure was to be utilized for

public access for much of the work. Coordination between normal landfill operations and the closure also had to be considered. The ease-of-use Solmax's systems provided gave Qayaq Construction the flexibility it needed, enabling rapid deployment with minimal impact on daily landfill operations.

In terms of physical site challenges, the closure involved extremely steep gradients as well as poor subsurface conditions. Differential settlement was a concern.

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CASE STUDY

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A leveling course, cushion layer, and topsoil were established. With previous closures of the Homer Landfill proving successful with geosynthetic designs involving GCLs and drainage nets, these Solmax solutions were selected — 21,460 m² (230,842 ft²) of **BENTOLINER** NW, a geosynthetic clay liner (GCL); the same amount of 250 mil (6.35 mm) **FABRINET**, a multilayer, multifunctional geocomposite; and 4,389 m² (47,218 ft²) of 40 mil (1 mm) **GSE** LL double-textured geomembrane, were used to meet the phase two requirements of the project.

Solution

BENTOLINER is a versatile, fabric-encased GCL. It is intended for moderate to steep slopes and moderate to high load applications where increased internal shear strength is required. The **FABRINET** geocomposite provided the needed durability for drainage, filtration, and puncture protection. The double textured **GSE** LL added frictional resistance. It is designed for applications that require increased elasticity and multiaxial break resistance where differential or localized settlements may occur, such as in landfill closures. To ensure conformance and add security, Solmax provided additional third-party testing of shear and permeability results.



With a high-quality product delivered on time—notwithstanding logistical challenges, shipping delays, manufacturing during the pandemic, and a Texas storm—and great communication between the manufacturer, general contractor and installation team, the project was a success. The result is a landfill capping system that meets the needs of this unique environment as well as the needs of the client.



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