GEOFABRICS CASE STUDY

GEOTUBE DEWATERS COAL FINES AT KESTREL MINE

PRODUCTS USED

Geotube® dewatering container geotextile

- Made from an engineered textile that is designed for dewatering high moisture content sludge and sediment
- High flow rate allows residual materials to dewater, whilst containing solids
- Simple to use as there are no mechanical or moving parts that could breakdown or wear and tear
- Custom fabricated with seaming techniques that withstand pressure during pumping operations
- Available in many sizes, depending on volume and space requirements
- Supported by design advice and guidance on polymer use for your sludge

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PROJECT DESCRIPTION

The primary objective for this project was to restore the storage capacity of the existing evaporation ponds at a coal mine site, located in Queensland. Prior to dredging, the HDPE lined evaporation pond had accumulated coal fines from the site waste disposal process, resulting in limited storage volume available to facilitate the evaporation of the effluent. Due to the consolidation and location of the solids within the pond, the slurry was too wet to remove with excavators.

The client, Kestrel Coal Resources had approached dredging contractor, MaxiTool with assistance from Geofabrics for a solution to facilitate the onsite slurry removal process at their mine site.

OUR SOLUTION

Geotube dewatering container was selected and used to capture dredged solids and dry them to a spadable consistency. This solution allowed the dewatering and drying of sludges without significant capital expenditure.

The Geotube containers were deployed on site to capture and dewater sludge in a confined footprint rather than open-air drying. Exposing dried coal to weather in drying beds can lead to having less control over the spoil and an increased risk of re-saturation during rainfall events. Dewatering containers provided the client with a cost-efficient method to drying solids on site by allowing the dredging operator to pump and operate at extreme flow rates that were consistent with their dredging equipment, resulting in less time on site and reduced labour costs.

The solid within the pond was hydraulically re-saturated into a slurry and pumped into the Geotube dewatering container. A total of 25 Geotube containers measuring 18m wide x 30.6m long were deployed on site to dewater a total of 20,000m^3 coal fines with pumping fill heights reaching 2.3m. The Geotube units settled to 1.6m once dried and after passively weeping.

Towards the end of the project, flocculants were introduced to improve

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dewatering performance, which assisted with maximising solids retained, promoting rapid solids separation and dewatering, mitigating the risk of clogging, and ensuring high-quality filtrate clarity from Geotube. As a result, the bags reached their maximum fill heights more gradually, signifying the effective filtration and drying properties of flocculated solids. The flocculated Geotube containers provided greater consistency in final fill heights, allowing the stacking of bags if desired and when properly configured.

The use of Geotube provided the client with the most cost-efficient solution for drying solids on site with consideration to the high flow rates from the dredge.

18m x 30.6m
containers installed

20,000 m³
of coal fines dewatered

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