

Non-contaminated Sediment Removal Project:

Fon du Lac: Geotube Dewatering of Lake Sediment

Situation

Approximately 20,000 cubic yards of non-contaminated silts and sediment needed to be removed from a harbor and shoreline area in Fond du Lac, Wisconsin to allow for safer navigation and docking. Fond du Lac is located on the southern shore of Lake Winnebago. Consolidation and solids removal from the site needed to occur rapidly in order to have the dewatered cake solids removed before the onset of winter. A parking lot at a city park was used as the Geotube laydown area.

Compliance with discharge permit requirements was critical since the filtrate/weep from the Geotube

dewatering operation was to flow back into a side channel from Lake Winnebago,.

Ciba was able to provide the chemical treatment, makedown/dosing equipment, and related services to the contractor in order for them to meet or exceed their processing and treatment objectives.

Process Description and Customer Needs

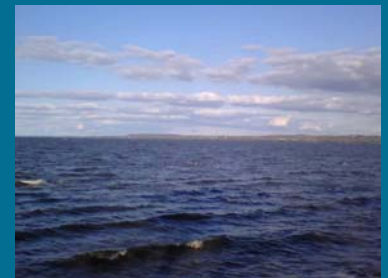
The sediments were hydraulically dredged and transported via pipeline to the Geotube dewatering process at a rate of approximately 1,000 – 1,200 gal./min. No pre-screening, segregation, or pre-thickening was employed. The complete slurry flow was treated and dewatered in the Geotubes.

It was decided by the contractor not to use Ciba's density measurement and associated polymer dosage control system. Instead, the contractor used a sample tap to visually monitor and control the chemical dosage throughout the project duration. Filtrate from the

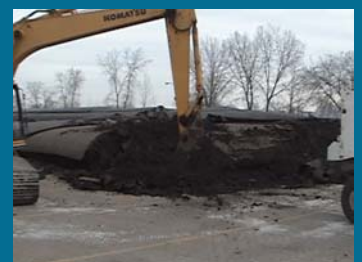
Geotubes flowed from the contained laydown area into the side channel through the parking lot's existing storm runoff system.

Treatment solutions for the dredging industry:

- Ciba[®] KRYVALIS[®] dredging coagulants and flocculants
- Ciba[®] ALCOTECH[®] polymer makedown equipment



Fon du Lac on the shore of Lake Winnebago



Dewatered sediment in Geotubes



Ciba® ALCOTECH® LPU liquid polymer makedown unit in operation at Fon du Lac project

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Program and Performance

Ciba Specialty Chemicals' package of chemicals, equipment, and services produced the desired results for the contractor's processing and treatment objectives. Both filtrate discharge and cake solids generation exceeded expectations.

Laboratory testing of the sediments identified **Ciba® KRYVALIS® FC2106D** as the recommended product for optimal performance.

For the project, polymer was put into solution with a **Ciba® ALCOTECH® LPU** liquid makedown system, which was used in conjunction with a mix tank, dosing pump with VFD (variable frequency drive) and post-dilution system.

The entire project was able to be completed on schedule. The

Geotubes were split open and the cake solids were removed for landfill disposal in only about a 30 day time period. Cake solids were estimated to be in the 60-70% Total Solids (by weight) range.

Customer Benefits Delivered

Benefits realized by the customer as a result of employing the Ciba treatment system included:

- ✓ Polymer solution preparation and dosing allowed for maximum dredge production rates and process throughput. *(benefit category: operational and economic).*
- ✓ Dewatered cake solids in excess of 60% Total Solids (by weight) allowed for easy handling, transport, and landfill disposal. *(benefit category: economic and environmental).*
- ✓ Discharge effluent quality remained at or below discharge permit requirements. *(benefit category: economic and environmental).*

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