

Environmental Remediation Project:

Conner Creek: Upland Disposal Using Geotube Dewatering

Situation

Construction of a CSO (combined sewage outfall) required the discharge creek to be dredged with a cutter head dredge to help remove sediments contaminated with PCB and mercury. An upland treatment site was cleared for the use of geotubes to consolidate and dewater the contaminated solids to a dischargeable cake.

In order to meet discharge permit requirements, the filtrate produced by the geotubes had to

be clean enough to be allowed back into the waterway. Ciba was able to help the contractor achieve all of their process objectives by providing a comprehensive package of chemical treatment, polymer makedown/dosage control equipment, continuous analytical laboratory support, applications expertise, and on-site service.

Process Description and Customer Needs

The contaminated sediments were dredged at a rate of approx. 1,700 gpm and pumped onshore for treatment and dewatering. With no coarse screening or mechanical separation for debris, which caused considerable reductions in dredging efficiency, the entire slurry flow required continuous density measurement and polymer treatment before being fed into the geotubes. In addition, variability was seen with heavier patches of hydrocarbons

encountered from time to time. Filtrate from the geotubes was routed to an excavated clarification area before overflowing into a discharge channel, and eventually emptying back into the waterway being dredged.

Treatment solutions for the dredging industry:

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



Combined sewage outfall discharge creek



Filtrate flowing from geotube after slurry solids flocculated with Ciba[®] KRYVALIS[®] flocculant



Ciba® ALCOTECH® DWU polymer makedown unit in operation at Conner Creek project

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Program and Performance

Ciba Specialty Chemicals' package allowed for consistent and controlled chemical treatment of the contaminated sediments, as well as producing filtrate well below the required permit discharge limits. Pre-project laboratory testing of the sediments identified **Ciba® KRYSALIS® FC2224** as the polymer of choice.

During the project, the polymer was put into solution with the high-rate **Ciba® ALCOTECH® DWU** dry polymer makedown system.

Polymer dosage was minimized and controlled effectively using the **Ciba® ALCOTECH® DS** dose control system. The use of this system allowed for a very high rate of polymer solution to be automatically prepared and dosed into a high slurry flow, while automatically compensating for flow and density variations.

Customer Benefits Delivered

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

- ✓ Automated polymer solution preparation allowed polymer to keep up with dredge production rates
- ✓ Automated polymer dosing compensated for variations in dredge slurry flow and density, resulting in reduced polymer demand, improved efficiency of geotube dewatering, and more conscientious use of polymer.
- ✓ Stackable cake from geotube dewatering process in excess of 60% total solids (by weight)
- ✓ Consistent removal of PCB and mercury in geotube dewatering allowing filtrate to be continuous

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