

## A REACTIVE GEOCOMPOSITE TO REMEDIATE CONTAMINATED, SUBAQUEOUS SEDIMENTS

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### REFERENCE

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### ABSTRACT

This paper describes a new geocomposite overlay, consisting of filter fabric layers surrounding a chemically reactive core, that is being developed to contain and remediate contaminated, subaqueous sediments. This geosynthetic-based reactive material will provide the same isolation as that of traditional soil caps, but will have the added advantages of: providing a remediation layer to adsorb and neutralize target contaminants; block resuspension of fine sediment particles; and serve as a foundation material during remediation. In addition, the geocomposite could be used in a tube configuration to simultaneously store and remediate dredged sediments. The paper describes the results of a two-phase, bench-top experimental program to assess the feasibility of this idea and to help model its scalability for sediment remediation in the field. This testing consisted of two parts: one-dimensional consolidation testing on layered systems of very soft soils and geotextiles, both woven and non-woven; and sorption isotherm testing of lead ions ( $Pb^{+2}$ ), in solutions of various pH and salt concentration, for both soil and zeolite. Results show the effects of the two geotextile types on the soil-geotextile system during consolidation, including changes in coefficients of consolidation and hydraulic conductivity. The adsorption tests shows the effectiveness of the zeolite in binding the lead ions, and the soil's potential for lead adsorption under a variety of pH and salt concentrations.