

Evaluation of Activated Carbon as a Reactive Sediment Cap Amendment for Feasibility Level Studies

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Background/Objectives. It has been demonstrated that the application of amendments (reactive materials) in the capping of contaminated sediment can enhance sequestration and remediation of a range of contaminants at costs well below conventional dredging approaches. However, during the early planning stages when reactive capping is being considered as a remedy, it is often difficult to estimate both the potential effectiveness and cost of this approach. At the Feasibility Study (FS) level, simple tools are needed to assist engineers and consultants to determine reliable reactive capping estimates.

Approach/Activities. To address this need, Cabot Corporation and Professor Danny Reible undertook a two-stage program. First, Cabot developed partition coefficients for specific activated carbon material for a range of common hydrophobic contaminants. Second, Professor Reible worked with Cabot to apply the CAPSIM model over a large number of scenarios to develop a matrix of results for various contaminant concentrations and cap/material application assumptions. AquaBlok provided input to Cabot regarding potential amendment applications for target contaminants, as well as treat-in-place considerations for determining thicknesses and approaches to delivering the reactive material. The matrix of results along with Aquablok's expertise were used to develop an online modeling tool engineers and consultants can use to quickly evaluate cap and in-situ treatment performance in sediment remediation projects.

Results/Lessons Learned. This presentation will provide an overview of the modeling tool's development, including support data and a tool demonstration. Issues relating to application of activated carbon will be discussed and evaluated. Examples of how the tool may be used to evaluate generalized designs and costs related to caps will be shown and discussed.