Fly Ash Sustainability: Transforming Dredged Soils into Construction Material

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Weathering and erosion of soils causes fine-grained silts and clays to flow with water and clog the navigation channels in the State of Maryland. Dredging these fine-grained soils with lots of moisture and placing them at Cox Creek Dredged Material Containment Facility (DMCF) or Hart-Miller island and some other locations is commonly done. The volume of the dredged material over time has continued to fill these DMCF creating the need for additional facilities [1]. This is not sustainable and moreover land near water is very expensive. Close to the Cox Creek DMCF is the Herbert A. Wagner Generating Station that burns coal to produce electricity. Fly ash is the byproduct of coal combustion and is a health hazard as it can cause breathing problems if inhaled. On the positive side, fly ash is made up of pozzolanic compounds that are used in building products like concrete. This study was focused on developing innovative cost-effective solutions to reuse these dredged soils and fly ash so as to improve the quality of air and water. The goal was to study the reuse of coal by-product material like Fly Ash and Dredged Soils by combining them with easily available construction material like lime. The experiment studied basic properties of these materials to transform dredged soils into construction material. The results summarized in this paper are encouraging and need to be studied in more details to develop these techniques further.

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