



Innovative Reuse of Dredged Material

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Maintaining safe passage to and from the Port of Baltimore requires dredging an average of 4.7 million cubic yards of sediment annually from the Baltimore Harbor and its approach channels.

Most dredged material currently is transported to placement sites at Cox Creek, Masonville, and Poplar Island. However, opportunities for these kinds of projects are limited and expensive. Finding placement sites to meet the Port's dredging needs has become a pressing challenge. As a result, new approaches to dredged material management have arrived on the scene.

What is Innovative Reuse?

The Maryland Port Administration increasingly looks to the "innovative reuse" and "beneficial use" of dredged material to minimize a pending shortfall in placement capacity. These practices have transformed dredged material into a resource to be used, rather than waste awaiting disposal.

In Maryland, innovative reuse refers to recycling dredged material so that it can be used in place of other raw materials—or in combination with them—for manufacturing, construction, and reclamation projects. (Beneficial use means using dredged material for environmental benefits, such as creat-

ing wildlife habitat and restoring eroded islands and beaches.)

Examples of innovative reuse include:

- Capping a landfill or brownfield
- Transforming dredged material into lightweight aggregates
- Reclaiming lands impaired by sand, gravel, and coal mining
- Manufacturing bricks and blocks
- Enhancing degraded farm land
- Producing manufactured topsoil
- Creating fill for construction projects

Exploring Innovative Reuse

In 2001, the state's Dredged Material Management Act named innovative reuse as one of the top priorities for the future management of dredged material. The Maryland Port Administration then formed a committee to explore innovative reuse options.

The committee released a 2007 report titled *Innovative Reuse of Dredged Material* (see www.mpasafepassage.com). The report recommends examining which if any of the applications are viable in Maryland. It also asserts that innovative reuse could address at least 500,000 cubic yards of dredged material each year. The potential exists to increase that amount substantially.

Dredged material was used as part of an innovative reuse demonstration project to prepare barley fields and farmland terraces in Anne Arundel County.



Challenges for Innovative Reuse

Innovative reuse presents several challenges.

Sediment Quality: The Baltimore Harbor was historically home to heavy industry, shipbuilding, and manufacturing. It is also a transportation hub, a depot, and the collecting basin for major sewage, stormwater, and urban stream outfalls.

All of these activities have left pollutants buried in the sediment. However, sediment from some areas of the harbor is relatively clean. This is the combined result of regular dredging, less industrial activity, and stricter environmental regulations.

Citizens and even scientists sometimes fail to distinguish between the variations in sediment quality, viewing all dredged material as nothing more than contaminated waste. They are therefore reluctant to use harbor sediment in upland locations.

Regulatory Issues: Innovative reuse of dredged material requires approval from the Maryland Department of the Environment. Demonstration projects are underway to test, among other things, the ability of dredged material to meet state requirements in various innovative applications.

Cost: Some ports have had success with innovative reuse, but the economics are challenging. Drying, transporting, and blending dredged material with other components can add significant costs to the final product. In Germany, for example, a facility produced bricks from dredged material, but the customers couldn't afford to buy them.

Maryland is examining ways to make innovative reuse affordable. Vigilance in containing costs and maximizing the benefits will be essential for any innovative reuse plan. Cost is a big factor in the demonstration projects currently underway.



A demonstration project at the Cox Creek placement site is using dredged sediment and slag fines to produce fill material for road construction.

What's Next?

Three projects are underway to demonstrate the innovative reuse of dredged material.

In Virginia, dredged material from the Baltimore Harbor has been placed at a defunct sand quarry and planted with a non-food crop. Results will indicate how well dredged material performs as a soil amendment for agriculture.

Two projects are exploring the use of dredged sediment for construction products. One project by HarborRock, Inc., has demonstrated the processing dredged material in a high temperature kiln to produce light weight aggregate. This aggregate appears to be highly marketable; they have begun developing a cost estimate for full-scale production. Schnabel Engineering is conducting a project at the Cox Creek placement site to demonstrate the feasibility of blending dredged material with slag to produce a fill material for road construction.

These demonstrations will hopefully address many questions regarding the challenges that lie ahead. Together, they will advance the effort to ensure that innovative reuse becomes a permanent, acceptable, and affordable part of Maryland's dredged material management strategy. ■