SEDIMENT TO SOLUTIONS
CHANNELING INNOVATION

MPA DMMP Innovative Reuse Program
December 3, 2018
Dredged Material Management

Harbor Channel Material - Where do we go next?
Dredging

Port of Baltimore Shipping Channels
Maintenance Dredging

• Port of Baltimore’s shipping channel
  o Maintaining a 50’ depth keeps channels safe and open and the Port competitive.

• Annual maintenance of the State’s marine highway
  o 136 miles of dredged channels/yr

• 4.7mcy of material is dredged annually
  o Harbor channel material: 1mcy/yr
  o Bay channel material
  o C&D Canal approach channel material
New Solutions Needed

Innovative Reuse and Beneficial Use

- Building Materials
- Habitat Restoration
- Manufactured Topsoil
- Site Reclamation

MPA Long-Term Innovative Reuse Goal:
Recycle 500,000 cy/year of Harbor Channel sediment
**Statutory Definitions:**

**Innovative Reuse:**
“includes the use of dredged material in the development or manufacturing of commercial, industrial, horticultural, agricultural or other products.”

**Beneficial Use:**
“Means any of the following uses of dredged material from the Chesapeake Bay and its tributary waters placed into waters or onto bottomland of the Chesapeake Bay or its tidal tributaries, including Baltimore Harbor:
(i) The restoration of underwater grasses;
(ii) The restoration of islands;
(iii) The stabilization of eroding shorelines;
(iv) The creation or restoration of wetlands; and
(v) The creation, restoration, or enhancement of fish or shellfish habitats.”
Harbor Channel Maintenance Dredged Material
WHAT’S IN IT?

• Physical Characteristics
  o Fine-grained Silts and Clays
  o Estuarine sediments (salinity ranges 1-15 ppt)
  o Initial moisture content: 70-80% water by weight before dewatering

• Chemical Characteristics
  o Metals – majority are not at levels of concern
  o Organics – infrequently detected
  o Bay & Harbor material contain Sulfides
The MDE Guidance Document guides prospective end users of dredged material through the various steps, permits or approvals necessary based on the proposed project. It covers the sampling requirements, environmental and public health standards and long-term management needs.

Establishes **4 categories** for management (including dredged material) of engineered fill or soil, including as a soil amendment:

- **Category 1** – Residential, Unrestricted
- **Category 2** – Non-Residential, Restricted Use
- **Category 3** – Restricted Use, Cap Required
- **Category 4** – Ineligible for Reuse
Innovative Reuse Opportunities

- Conducting Field Demonstrations/Small Scale projects
- Governor Hogan issued Waste Reduction/Resource Recovery Executive Order
- MPA Completing Studies: UMD Testing Topsoil & Fill Material Blends
- Partnering with Maryland State Highway Administration (SHA)
Demonstration Projects

Currently evaluating projects using dried dredged material from Cox Creek DMCF for:

- **Alternative Daily Cover** (ADC) in partnership with Baltimore City
- **Engineered Fill** – on MPA property
- **Small test nursery** – growing grass in dredged material

Also exploring alternative sediment management opportunities at Hart Miller Island:

- **Design with Dredge pilot project** – in partnership with local landscape architecture firm, Mahan Rykiel.
Test Nursery at Cox Creek DMCF

Legend
DM: Dredged Material
LeafGro: Organic compost
Lime: Corrects soil pH

Plot 1 – Control Plot: 100% Topsoil & Seed Mix
Plot 2 – 75% DM, 25% LeafGro, Seed Mix & Lime
Plot 3 – 50% DM, 50% LeafGro, Seed Mix & Lime
Plot 4 – 100% DM, Seed Mix & Lime
Plot 5 – 100% DM & seed mix
Plot 6 – 75% DM, 25% LeafGro & Seed Mix
Plot 7 – 50% DM, 50% LeafGro & Seed Mix
Plot 8 – TBD
Governor’s Executive Order

June 2017 - Governor Hogan issued Waste Reduction/Resource Recovery Executive Order → prompted the creation of Sustainable Materials Management Maryland (SM3)
University of MD Studies

**Topsoil Study:** Aimed to develop a dredged material blend with properties that meet the MDOT SHA topsoil specifications, evaluate potential leaching characteristics, and determine the geotechnical stability of the blend.

**Embankment Study:** Explored the use of dredged material as potential highway embankment material. This study was conducted by amending the dredged material with quarry by-products. Geotechnical analysis was coupled with an environmental assessment to ensure satisfactory performance of the dredged material in structural fills.
SHA will be updating the 920 furnished topsoil specification to remove the words “dredge spoil” from the Harmful Materials provision.
Questions?

Sediment to Solutions: Channeling Innovation