SUMMARY OF THE DREDGED MATERIAL MANAGEMENT PROGRAM
INNOVATIVE REUSE COMMITTEE (IRC) MEETING
February 10, 2026, 5:30 PM In-Person and Virtual Meeting

Attendees:
Alluvia Consulting: Kristen Keene
Anchor QEA: Walter Dinicola, Billie-Jo Gauley*
Arcadis: Albert Buell, Amanda Kohler*
Baltimore County Department of Environmental Protection and Sustainability: David Riter
Baltimore Port Alliance: Rupert Denney
Carlexson Consulting: Amanda Mohr*
Chesapeake Bay Foundation: Gussie Maguire*
Clean Water Action: Jennifer Kunze*
CSI Environmental, LLC: Craig Hebert, Drew Hobbs, Craig Stevens
CTL Group: Pavan Vaddey*
Dun Logan Community Association: William Feuer*
EcoLogix Group: Steve Pattison*
FLSmidth: Michael Prokesch*
GEI Consultants: Nancy Straub*
Haley & Aldrich: Dan Hoardley*, Ben Marino, Justin Martin
HarborRock: Gregory Otto*, Jeffrey Otto, Robin Otto
Howard County Department of Public Works: Yosef Kebede*
Maryland Department of Natural Resources: Maggie Cavey*
Maryland Environmental Service: Saeka Foreman, Dallas Henson, Robert Natarian
Maryland Port Administration (MPA): Rachael Gilde, Holly Miller, Kelvin Moulden, Joe Ross, Nathan Thompson
Maryland Legislative Coalition: Dave Arndt*
Maryland State Highway Administration: Hua Xiang
Members of the public: Natalie Arnez, Evelyn Hoon (Doctoral Student), Dallas Johnson*, Michael Tartal*
Northeast Maryland Waste Disposal Authority: Andrew Kays*
Northgate Environmental Management: Jacob Lacy, Scott McLaughlin*, Sam Merrill*
The Nature Conservancy: Austin Bamford
Remline: Michelle Puszcz*
Rock Creek Community: Greg Sliviak, Ruth Sliviak
Rummel, Klepper and Kahl (RK&K): Fayth Strain*, Sari Rothrock, Ed Tinney
Sierra Club: Ben Cushing*
Stancills, Inc.: Chris Siciliano
Stoney Beach Community: John Garofolo
The Nature Conservancy: Isaac Hametz
Tradepoint Atlantic: Peter Haid
University of Maryland Center for Environmental Science: Elizabeth Price*
USACE Dredge Material Program: Valerie Morrow*
Water Oak Cove: David Copley

*Denotes attendees who participated virtually

1.0 Welcome and Introductions **Sari Rothrock and Ed Tinney, RKK**

Ms. Rothrock welcomed attendees and reviewed the meeting agenda. Mr. Tinney led introductions of in-person attendees, and Ms. Rothrock followed with introductions of virtual attendees. Attendees were provided with the summary of the November 4, 2025 IRC meeting and were asked to review and provide comments by February 13, 2026.

2.0 Innovative Reuse Program Updates **Kelvin Moulden and Joe Ross, MPA**

Mr. Moulden provided updates on several initiatives:

- **STAR Facility Remediation:** In 2022, MPA acquired the Cox Creek Sediment Technology and Reuse (STAR) Facility with the goal of supporting large-scale Innovative Reuse (IR) operations. To advance environmental remediation, the site was divided into five Operable Units (OUs), with cleanup occurring in phases over approximately 10 years. Remedial Action Plans (RAPs) for all five OUs have been approved by the Maryland Department of the Environment (MDE). MPA is currently working towards the closure of the Upland Area OU, and anticipates a no further action designation from MDE by the end of 2026. This OU is expected to be used for future commercial-scale IRBU of dredged material. Currently, pre-design investigation work is underway with a mobile drilling rig onsite, collecting samples for a treatability study for in-situ stabilization.
- **Cox Creek STAR Facility: Request for Information (RFI):** In September 2025, MPA opened an RFI inviting companies to share their ideas and capabilities for the IR and BU of dredged material from the Cox Creek dredged material containment facility (DMCF). The RFI was closed on December 19, 2025, and responses are currently being evaluated confidentially.
- **Research and Development (R&D) Projects:** Results of seven of the nine R&D projects have been shared, most recently when Northgate Environmental presented at the November 2025 IRC meeting. One of the final two, HarborRock, will present later in the agenda on lightweight aggregate (LWA) and supplementary cementitious material (SCMs). Findings from the final project, from the University of Maryland (College Park), will be presented at the May 2026 IRC meeting.

Mr. Moulden shared capacity recovery goals associated with the recovery of dredged material from the upland placement sites over the next five years and beyond. Excavation of material from these sites helps extend the service life of the facilities. In state fiscal year (SFY) 2026, the goal is for MPA to recover 50,000 cubic yards (cy) of dredged material. Current on-site efforts include excavating material from within the DMCF and placing it along the dike slopes to dry. Additionally, MPA acquired unused geotubes from the Mid-Chesapeake Bay Island Ecosystem Restoration project and transported them to Cox Creek to support future dewatering operations.

Mr. Moulden then discussed prospective IR projects, which include two MPA facilities, Hawkins Point DMCF South Cell, with a capacity of 60,000-90,000 cy of material, and the Masonville Kurt Iron Slip with an estimated capacity of 100,000 cy of material. Discussions were previously underway with the Baltimore Peninsula project; however, there is a level of uncertainty related to developer changes. The BGE Riverside project, a substation near Turner Station, may require up to 20,000 cy for wetland remediation.

Mr. Moulden presented three additional coordination initiatives that could potentially enhance capacity recovery efforts. First, following a previous demonstration project, MPA will resume coordinating with Baltimore City to determine the potential for a long-term agreement to provide dredged material for daily cover at Quarantine Road Landfill (QRL). Second, MPA is exploring the interest of soil producers

and suppliers regarding the use of dredged material for blending. Third, MPA is coordinating to meet with commercial real estate developers to assess their interest in collaboration.

Questions and answers with the IRC followed:

Speaker	Question	Speaker	Answer
Mr. Denney	How much of a factor is collaboration with third-party contractors in reaching outlined capacity recovery goals?	Mr. Moulden	The initial years will focus on efforts led by MPA while the STAR facility is under development. Overall, the figures reflect total recovery goals, which may include MPA initiatives, such as a dewatering field, third-party contractors, which are likely to be initiated in years SFY 2028 or SFY 2029, or a combination of both.
		Ms. Miller	However, MPA has the ability to independently achieve the capacity recovery goals outlined, utilizing the entirety of the Cox Creek STAR property.
Mr. Kays	Are there discussions with Baltimore City regarding the QRL project about using dredged material not only as daily cover but also as intermediate cover due to its organic content?	Ms. Henson	The original QRL pilot project was specifically for daily landfill cover; however, given the results of the study, MDE approved the material for use as both daily and intermediate landfill cover.

Mr. Moulden concluded his presentation by announcing that the IRC, which was established in February 2006, was celebrating its 20th Anniversary.

3.0 R&D Outcomes: HarborRock **Jeffrey Otto**

Mr. Otto presented the evaluation results of LWA and SCM made exclusively from the Cox Creek DMCF dredged material. Samples of both SCM and LWA were passed around. LWA and SCM are mixed with water and sand to create concrete products. The project's objective was to confirm whether LWA and SCM could be produced from Cox Creek/Harbor dredged material. HarborRock evaluated whether lightweight structural concrete, lightweight masonry concrete, and conventional concrete made with the LWA, SCM, and both combined would meet applicable ASTM standards. Additionally, HarborRock investigated whether the LWA, SCM, and resulting concrete products would qualify as Category 1 – Residential Unrestricted Use Soil and Fill Material under MDE (2019) criteria.

LWA is formed naturally through volcanic activity and can also be manufactured in kilns using expanded shale, slate, and clay. It is low-density, retains water, and offers excellent thermal and acoustic properties with minimal shrinkage. LWA is well-suited for structural concrete, insulation,

geotechnical fill, and wastewater treatment applications. SCMs, such as coal ash, volcanic ash, and calcined clay, improve the performance and sustainability of concrete. SCMs enhance strength and durability, increase resistance to chemical attack, and extend service life. They also reduce reliance on Portland cement, supporting sustainability goals.

The project team consisted of:

Team Member	**Roles and Responsibilities**
HarborRock	Lead Investigator
Maryland Department of Environment	Regulatory oversight
Maryland Port Administration	IR Promoter and research sponsor
Anchor QEA	Contractor support
FLSmidth	Production of LWA and SCM
CTL Group	Concrete production and ASTM testing
FTL Labs	Analytical Testing

Mr. Otto outlined the steps for testing LWA and SCM for use as concrete products, which included material collection, conversion process flow, verification testing, concrete production, and chemical analysis (per the MDE sampling plan).

The LWA resulting from the process met all ASTM physical and chemical standards, and the LWA structural and masonry concrete met all ASTM requirements. Compared with a standard batch of concrete, equilibrium density was 3.6% less, compressive strength was 56% greater, splitting tensile strength was 21% greater, and drying shrinkage was 57% less.

The SCM resulting from the process was confirmed for use as a Portland cement substitute by X-Ray Florescence (XRF) and Diffraction (XRD) tests. The Strength Activity Index (SAI) showed that a 20% SCM replacement was 106% higher than the control batch. The Alkali-Silica Reaction (ASR) was shown to be suppressed with the use of SCM. There were two control batches that were used, one that had 10% SCM and one that was 20% SCM. When testing their compressive strength against a control batch, the 10% SCM showed 7% higher compressive strength and the 20% showed 14% higher compressive strength. Chloride penetration was also compared to a control batch, and the 10% SCM resulted in 38% less chloride penetration and the 20% SCM resulted in 60% less penetration. When combining both the 25% LWA and the 15% SCM, test results showed 10% greater compressive strength and 49% less chloride penetration than a standard batch of concrete.

All ingredients, control batches, and final concrete IR batches were analyzed per Table A2-3 of MDE's IRBU Guidance document. Results found there were no leaching concerns. When the dredged material used to create the control batches was tested against commercially available materials, arsenic and hexavalent chromium (IV) were found to be present in the dredged material and carried through into the control batches.

When categorizing the ingredients per MDE IRBU guidance, the dredged material, lab cement, and control concrete 1 and 2 all were categorized as Category 2. Lab fine aggregate and lab coarse aggregate were categorized as Category 1. As final products, LWA, SCM, LWA Structural Concrete, LWA Masonry Concrete, and Control 2 Concrete with 15% SCM and 25% LWA were all categorized as Category 2. Control 1 Concrete with 10% SCM and Control concrete with 20% SCM were both categorized as Category 1.

Testing showed that 100% dredged material could be used to produce LWA meeting ASTM requirements for structural concrete and masonry units, as well as SCM that could partially replace cement. Replacing 10–20% of cement with SCM improved concrete strength and durability, and a mix using 15% SCM and 25% LWA performed even better. Synthetic Precipitation Leaching Procedure (SPLP) testing confirmed that the LWA, SCM, and resulting concrete did not leach harmful contaminants.

Per these results, LWA and SCM made from 100% dredged material are viable, non-virgin alternatives to traditional aggregate and cement. Dredged material from Baltimore Harbor/Cox Creek DMCF has shown consistent mineralogical composition over the past 30 years, and key properties such as density and color can be controlled during processing.

Mr. Otto explained considerations for a full-scale product output. Concrete is the second most used material in the world, with cement serving as the binding "glue," and U.S. aggregate consumption exceeds ten tons per person annually. An IR facility reusing one million cubic yards of dredged material could produce about 200,000 tons of LWA or SCM each year. Given that roughly 77 million tons of aggregate and 300,000 tons of cement were used within 100 miles of Cox Creek DMCF in 2023 (per USGS), only minimal market penetration would be needed to fully utilize the plant's output. In order to achieve this level of success, a plant would also require a reliable supply and inventory of feedstock material within close proximity, a roughly 20-acre site zoned for industrial operations, high capacity electric and natural gas service onsite, and easy access to major highways with barge and rail options for transport.

Questions and answers with the IRC followed:

Speaker	Question	Speaker	Answer
Mr. Garofolo	What emissions are created from the kiln process and what are the mitigation processes?	Mr. Otto	Full-scale operations would need to meet permitting criteria and would be equipped with all the required systems to control emissions (i.e. gas, CO, NOX, and acid gas)
Mr. Copley	How does the HarborRock product compare to other concrete products that contain additives to address items such as cold or hot weather? Was it found that additives were needed in the HarborRock project?	Mr. Otto	Two additives were used during the study: a water-reducing agent and an air-entraining agent. These agents were used in small quantities.
		Mr. Moulden	Typically, chemical additives for concrete are stipulated by the end use and site conditions and are included after the material has left the production facility.
Mr. Denney	What is the acceptable level of variance in the chemical and physical composition of the input material? Additionally, how does the material from within the Cox Creek DMCF align with these composition needs	Mr. Otto	For the production of HarborRock's aggregates, silt/clay material is required. As a part of the production process, the material undergoes drying and screening, which filters out material too large in grain size.

Speaker	Question	Speaker	Answer
	Does the process include quality control measures?		Yes, quality control measures are incorporated into the process.
Ms. Sliviak	In reference to the HarborRock website, are there fully operational facilities in Baltimore or in other listed locations?	Mr. Otto	The locations highlighted on the website map are locations that HarborRock has further investigated to determine if results from the current study could be replicated.
Mr. Tartal	Have you completed a Return on Investment (ROI) evaluation?	Mr. Otto	An ROI evaluation was outside the scope of this project and therefore, was not conducted.
Mr. Sliviak	How does the handling process, including drying and screening, impact cost in comparison to concrete made from quarry stone?	Mr. Otto	HarborRock has conducted market analysis and determined that the product must be priced competitively. Therefore, the product cost would fall within the market price for comparable products.
		Mr. Moulden	The HarborRock investigation of Cox Creek dredged material as LWA and SCM was a research and development project to investigate overall technical feasibility. Next steps based on conclusions from the project or analysis, such as marketability, were outside of the project scope.
Mr. Garofolo	With the approach being a novel process, what risks and associated costs may the State of Maryland have to address in implementing a full-scale operation?	Mr. Otto	As part of any proposal to Maryland or any other Port, HarborRock would absorb any and all risk, including financial and legal risk, as a private entity.
		Ms. Miller	Further research would have to be conducted. However, identifying risks is a top priority as a state agency, ensuring the most effective use of funding opportunities.

4.0 New Year, New Direction

Mr. Moulden introduced a small group breakout session designed for IRC attendees to provide MPA with recommendations about how the IRC and IRC meetings should evolve as the MPA's program shifts from planning to implementation. Ms. Rothrock broke attendees into groups to answer three questions related to the future of the IRC:

1. How should the IRC evolve?
2. What's the best way to provide attendees with IR/BU news?
3. Which audiences and venues should MPA reach out to for advancing IR/BU?

In the room, participants were broken into three groups and assigned to a station with one of the three questions. Each station/question had a designated MPA facilitator. In round one, participants were

instructed to read the question, review the listed answers, and then brainstorm additional responses. After five minutes, they were instructed to move clockwise around the room and repeat the process at the second station. After another five minutes, they were instructed to repeat the process at the third. In round two, participants again moved from station to station, and this time they were instructed to review all responses and use sticky dots to indicate their preference for responses. Each participant received three dots for each question. Dots could be allocated to as many or as few answers as the participant liked.

Online, participants were assigned to one of two virtual breakout rooms. In the rooms, facilitators led them through the round 1 exercise for all questions (brainstorming responses) and then round 2 discussions about preferences. Participants could provide up to three preferences for each question. Following the exercise, facilitators provided station report-outs. The top-ranked responses for each of the questions are noted below.

Question	Answer	Response Tally
How should the IRC evolve?	Shift to a beneficial use (BU) focus / R&D and pilot projects with BU focus	17
	Provide updates on progress at the STAR facility	12
	Focus on consistency and quantity of material	7
What's the best way to provide attendees with IR/BU news?	Continue quarterly in-person meetings with interaction	10
	Recorded webinar	9
	Site visits	8
Which audiences and venues should MPA reach out to for advancing IR/BU?	Students/universities with programs in landscape architecture and engineering, or science	11
	Engineers/Engineering community	9
	Communities	8

Results and next steps will be further discussed at the next IRC meeting.

5.0 Announcements and Adjourn

Ms. Rothrock alerted the group that the next IRC meeting will be held on May 12, 2026.