

FINAL
SUMMARY OF THE DREDGED MATERIAL MANAGEMENT PROGRAM
INNOVATIVE REUSE COMMITTEE (IRC) MEETING
November 4, 2025, 5:30 PM In-Person and Virtual Meeting

Attendees:

Alhuvia Consulting: Kristen Keene*
Alliance for the Chesapeake Bay: Laura Todd*
Anchor QEA: Walter Dinicola, Billie-Jo Gauley*
Arcadis: Albert Buell, Amanda Kohler
Calstart: Eleanor Johnstone*
Carlexson Consulting: Mindy Strevig
Chesapeake Bay Foundation: Gussie Maguire
Comus SPP: Brad Hill*
Cox Creek Citizens Oversight Committee: Gary Gakenheimer
CSI Environmental, LLC: Craig Hebert, Craig Stevens
EA Engineering, Science, and Technology (EA Engineering): Frank Barranco, Kandice Sermon*
EcoLogix Group: Steve Pattison*
GEI Consultants: Nancy Straub
Haley & Aldrich: Dan Hoardley, Ben Marino, Dave Morgan*
HarborRock: Jeffrey Otto*
Maryland Department of Natural Resources (DNR): Maggie Cavey
Maryland Environmental Service (MES): Saeka Forman, Dallas Henson
Marylanders Grow Oysters: Carl Treff
Maryland Port Administration (MPA): Rachael Gilde, Holly Miller*, Kelvin Moulden, Joe Ross, Darren Swift
Montclair State University: Eric Stern*
Northeast Maryland Waste Disposal Authority (NMWDA): Andrew Kays*
Northgate Environmental Management: Deni Chambers*, Darragh Donnelly, 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): Sari Rothrock, Ed Tinney
Stancills, Inc.: Chris Siciliano*
Stoney Beach Community: John Garofolo
The Nature Conservancy: Austin Bamford
Tradepoint Atlantic: Peter Haid
University of Maryland Center for Environmental Science (UMCES): Elizabeth Price

*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 May 13, 2025 IRC meeting and were asked to review and provide comments by November 7, 2025.

2.0 Innovative Reuse Program Updates MPA

Rachael Gilde and Kelvin Moulden,

Ms. Gilde provided a recap of the May 2025 IRC meeting, which sought to familiarize attendees with the dredging and IR/ B U processes using an interactive board game called “Channeling Innovation.” After playing the board game, attendees participated in a small group discussion that focused on the types of information and community engagement needed to move Innovative Reuse and Beneficial Use (IR/ B U) projects towards implementation. Attendees discussed the physical and chemical characteristics of the material that may drive end use, clarifying processes for end users, and varying IR/ B U project options. It is anticipated that the board game will be enhanced for a more general audience use in the future.

Ms. Gilde noted the August 2025 IRC meeting was cancelled, and written updates were provided via email in September. The written update can also be found in the [Google share folder](#). Ms. Gilde also announced that the Annual Meeting will be held on Friday, December 5, 2025.

Mr. Moulden provided updates on several initiatives:

- **Is BU4U Workshop:** The workshop, held in July 2025, was a collaboration between Maryland DNR and the Nature Conservancy and was designed to provide training related to the planning and implementation of BU projects. Participants learned BU fundamentals, explored real-world examples, reviewed ecological and economic benefits, and gained insights into permitting, funding, and collaboration for future BU efforts. MPA attended as a participant on the Beneficial Use Regulatory Panel; MPA also led the “Channeling Innovation” board game session at the workshop.
- **STAR Facility Remediation:** MPA purchased the Cox Creek Sediment Technology and Reuse (STAR) Facility in 2022 with plans to use the property for large-scale IR operations. To facilitate remediation, the STAR Facility was divided into five Operable Units (OUs), and each area will be remediated through a phased approach over the course of approximately 10 years. Remedial Action Plans (RAPs) for all five OUs have been approved by the Maryland Department of the Environment (MDE). MPA anticipates that the Upland Area OU will be ready for larger-scale IR operations by the middle of 2026.
- **STAR Facility RFI:** MPA publicly advertised a Request for Information (RFI) on September 2, 2025, with requests related to operational plans, economic feasibility, environmental concerns, and processes for private industries to engage in large-scale activities at the STAR Facility. RFI questions are due to MPA by December 12, 2025, at 11:59 pm, and the RFI closes on December 19, 2025, at 11:59 pm. Four tours have been offered for interested parties to attend. One session was held in September, and the next tours will be on November 14, 2025, from 10:00 am to 12:00 pm, and 1:00 pm to 3:00 pm.
- **The Colgate Creek Dredging Project:** Material is being dredged from Colgate Creek between Dundalk and Seagirt Marine Terminals, which is then hydraulically pumped directly into geotubes at the Cox Creek dredged material containment facility (DMCF). Potential locations for the usage of the material are the MPA Hawkins Point DMCF South Cell and Masonville Kurt Iron Slip. Hawkins Point, a decommissioned DMCF, requires approximately 44,000 cubic yards (cy) of dredged material for closeout but can potentially hold up to 90,000 cy of material. The Masonville Kurt Iron Slip can hold up to 100,000 cy of material, which could potentially be used for the +42 feet dike raising at the Masonville DMCF. Two non-MPA projects may also be looking to reuse dredged material (the Baltimore Peninsula Project [761,000 cy] and

the BGE Riverside General Station [20,000 cy]). The total material load from the Colgate Creek project is 160,000 cy, which is insufficient to meet all potential material requests.

- **The Cox Creek Geotube Pilot Project** involves investigating combinations of different commercially available geotextile fabrics and flocculants to determine which ones work best with the sediment. Treatability testing is underway, which includes jar testing and dewatering tube testing. The next project deliverable is a summary memo, which will inform future full-scale geotube dewatering at the Cox Creek DMCF.
- **R&D Projects:**
 - **University of Maryland (UMD, College Park)** is researching vegetative earth berms. The project has been extended through May 2026. UMD plans to present project findings at the May 2026 IRC meeting.
 - **HarborRock** is researching lightweight aggregates and supplementary cementitious materials (SCMs). Final testing, analysis, and material categorization are being completed. Results will be presented at the February 2026 IRC meeting.
- **IRBU Strategy Document:** the 2020 IRBU Strategy Document was revised following polling and discussions with the IRC in early 2025 and was approved by the Management Committee in September 2025 and the Executive Committee in October 2025.

3.0 R&D Outcomes: Northgate Environmental Management Sam Merrill and Jacob Lacy

Mr. Merrill provided an update on the Northgate Environmental Management (Northgate) testing of Cox Creek DMCF sediment for use as SCM and cement clinker (clinker), with support from Anchor QEA, MPA, MDE, Georgia Tech, and the CTL Group, alongside academic partners Dr. Paulo Monteiro (UC Berkeley) and Dr. Kim Kurtis (Georgia Tech).

Mr. Merrill explained that cement is made by combining ground clinker and SCMs, with Ordinary Portland Cement (OPC) typically containing 20 percent fly ash, which is increasingly scarce. The SCM and clinker projects aim to test whether Cox Creek DMCF sediment can replace fly ash at lower kiln temperatures to reduce costs and emissions. The projects will assess optimal temperatures for reactive SCMs (Workstream 1) and the chemical suitability of the sediment for use as cement clinker (Workstream 2).

Mr. Lacy outlined the project schedule, noting that Northgate began material collection for testing in January 2025 and material collection for larger-scale evaluation for SCM and clinker in March 2025. The team is currently developing final project deliverables.

The processes for Workstreams 1 and 2 were:

Workstream 1 – SCM	Workstream 2 – Cement Clinker
Prepare sample (crush and sieve)	Prepare sample (crush and sieve)
Heat subsamples as necessary (110° Celsius [°C]) (Puck-like mass is formed at 900°C)	Test for RCRA metals, conduct TCLP
Test via SEM, XRF, and XRD, identify potentially pozzolanic phases	Conduct Loss on Ignition testing
Optimize calcination temperature profiles	Compare to local shale and clay
Cast mortar cubes, test strength	Produce lab-scale cements

Compare pozzolanic reactivity to fly ash and metakaolin via TGA	Determine phase composition via XRD and XRF
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Mr. Lacy provided a material characterization of the Cox Creek sediment. Elemental chromium exceeded the Eastern Maryland Anticipated Typical Concentration (ATC) standard. Aluminum, iron, cobalt, thallium, and one dioxin fell within Category 1 (residential unrestricted use soil and fill material) of the MDE IRBU Guidance document. Manganese, arsenic, and one dioxin fell within Category 2 (non-residential restricted use soil and fill material). MDE has confirmed that the Cox Creek sediment meets Category 2 – Non-Residential Restricted Use Soil and Fill Material.

Mr. Merrill provided the results of Workstream 1 (SCM). At 28 days, the 600°C sample had strength comparable to OPC. At 56 days, the 600°C sample's Strength Activity Index was 46% above ASTM standards. These results show that the material would not have to be heated at 1450°C, which offers cost savings and reduces emissions. When testing as a cement replacement, results showed 20% is the optimal replacement amount. When comparing Portlandite consumption to other samples, the 600°C sample consumed more Portlandite than two of the three other calcination temperatures.

Workstream 2 (clinker) results showed that the material had similar chemical characteristics to Hagerstown shale, and although sodium oxide and manganese oxide levels were higher than desired, they could be adjusted via amendments. Free lime was high and would need to be blended to reduce to a normal range (<2%). Because of its high durability, the material could be used in winter products, which require a higher resistance to freeze/thaw cycles. The challenge would be introducing a niche product in a market that wants to see large demonstration products before commercial-scale adoption.

To produce SCM at full scale, kiln temperature would need to be optimized, a grinding process would need to occur after calcination to increase reactivity; the heterogeneous particle size distribution would also need to be addressed. For clinker consideration, access to a large-scale sediment dryer would be needed.

The greater Baltimore residential ready-mix concrete market is valued at \$175–\$210 million annually, representing 400,000–625,000 cy of material. Using a 20% replacement rate, the SCM market equals about 102,500 cy per year, with additional potential in large-scale, non-residential projects requiring coordinated planning.

Questions and answers with the IRC followed:

Speaker	Question	Speaker	Answer
Mr. Garofolo	What undesirable substances might be produced/released through off-gassing, and how can they be mitigated?	Mr. Merrill	Hazardous materials were not produced. Firms that would take the research results and bring them to the marketplace have the industrial equipment necessary for this purpose. At the lab scale, there were no byproducts that created this issue.
Mr. Haid	Why was clinker tested for metals but not SCM? What are implications of the test?	Mr. Merrill	The metals test was not performed in both workstreams because the same material was used for each.

Speaker	Question	Speaker	Answer
			Metal analysis was conducted to assess motility. While it is known that there are metals present in the sediment, understanding the types and quantities of these metals is valuable information for manufacturing purposes.
Mr. Barranco	Was it hypothesized that the results would show highly potent belitic minerals due to the presence of high organic carbon and sulfide minerals?	Mr. Merrill	Yes, this was anticipated.
Ms. Straub	What was the sample size used for the strength testing, and which standards were applied?	Mr. Merrill Mr. Moulden	The strength test included three samples at each temperature. A STM standards were followed for strength testing.
Mr. Butler	Does the material used in the study accurately represent the dredged material that would be available in any given year, or would it vary depending on the chemical composition?	Mr. Merrill Mr. Moulden	The material used in the study is representative. There is some variability depending on where you dredge, but when considering the use of the Cox Creek material for producing pozzolans and SCMs, the differences may not be as broad.
Mr. Kays	What is the energy profile of the facility that can process the dredged material and convert it to the cubic yardage mentioned in the presentation? What is the annual usage in kilowatt-hours or decatherms of gas?	Mr. Merrill Mr. Moulden	The number is currently unavailable. The RFI, currently open to the public, includes these types of questions.

4.0 Lightning Talks

Sari Rothrock, RKK

Ms. Rothrock introduced members of the IRC who agreed to participate in lightning talks. Lightning talks are short, focused presentations designed to provide bursts of information and spark conversation and collaboration. IRC members were tapped to give four-minute presentations about why they find IR personally or professionally compelling and share what they hope to see in the future.

Nancy Straub, PE, ENV SP, LEED AP

GEI Consultants

Ms. Straub has a Bachelor's of Science (BS) from the University of Pittsburgh and an Master's of Science (MS) from the University of Maryland in Civil & Environmental Engineering, with nearly 29 years of experience in engineering consulting across the U.S. and internationally, including projects in Suriname, Turkey, Azerbaijan, Guatemala, Lebanon, and Mexico focusing on sustainability. Ms. Straub finds the IRC compelling because it involves a range of technical challenges related to dredged material management. Intriguing challenges include reusing dredged material to create space in DMCFs, designing geotechnical and environmental properties, finding suitable applications without

forcing the material into inappropriate uses, addressing environmental contamination, and ensuring solutions are financially viable and minimally energy-, carbon-, and GHG-intensive.

Elizabeth Price

University of Maryland Center for Environmental Science

Ms. Price spoke about her family's roots in the region, and her path to involvement with IR. In 2002, Ms. Price began working at the University of Maryland Center for Environmental Science, Chesapeake Biological Lab, which led her to the DMMP and the IRC. In the early 2000s, Ms. Price began reviewing IR projects, including mine reclamation and brick making. In 2017, Ms. Price supported studies evaluating the costs avoided by using IR compared to a non-IR baseline for building a new DMCF. In 2022, Ms. Price supported an analysis that investigated how much DMCF capacity was recovered when dredged material is removed from the Cox Creek DMCF, based on data from early-phase drying work. Results showed that for every cy of dried dredged material produced, roughly two cy of capacity was recovered at the DMCF. In 2025, Ms. Price is reflecting on her history with IR and believes that the early discussions and evaluations have allowed the MPA to further refine the processes and have led to the cusp of implementing IR on a much larger scale.

Gussie Maguire

Chesapeake Bay Foundation

Ms. Maguire holds a BS in English and Geology from the College of William & Mary and an MS in Environmental Management from the University of Maryland Global Campus, with experience in environmental education and conservation through roles with Casey Trees, the Anne Arundel Office of Environmental Literacy, and the Chesapeake Conservation Corps. Ms. Maguire currently serves as a Maryland Staff Scientist at the Chesapeake Bay Foundation, having previously worked as an Environmental Specialist at the Maryland Environmental Service. Her start in the IRC began when Mr. Doug Myers invited her to work with the DMMP. In her current position, she focuses on understanding the health of the Chesapeake Bay, which includes dredged material. She highlighted the increase in terrapin nesting locations from 2004 to 2024 and how dredged material can be used beneficially in efforts such as raising marsh elevation to mitigate flooding.

Laura Todd

Alliance for the Chesapeake Bay

Ms. Todd has been with the IRC for almost eight years and holds a Bachelor of Arts (BA) in Environmental Studies from Elon University. Her employer, the Alliance for the Chesapeake Bay, works to restore the lands and waters of the Chesapeake Bay watershed through collaborative, action-oriented solutions, technical assistance, and capacity-building for healthier ecosystems. Their vision is clean water and resilient landscapes supported and cared for by everyone in the watershed community. Ms. Todd works on the Green Infrastructure team, advancing restoration work (wetland creation and enhancement, living shorelines, stream restoration). Ms. Todd serves on the IRC because she recognizes the significant potential of IR and B U throughout the Chesapeake Bay watershed. Leveraging every tool is essential to enhancing coastal resiliency, and IR offers a promising approach to address MPA's needs while lowering the carbon footprint of numerous products. Ms. Todd highlighted the Trossbach Farm Living Shoreline, which is currently under construction with breakwaters installed in the summer of 2025.

Austin Bamford

The Nature Conservancy

Mr. Bamford is a landscape architect at the Nature Conservancy, which serves to conserve the land and waters on which all life depends. Mr. Bamford's interest in being a member of the IRC stems from his background in glass blowing and associated understanding of chemical reactions, as well as his role in streamlining B U with the Nature Conservancy. Mr. Bamford works at the MD/DC Chapter under

the Northeast Division, and some of the projects that he works on focus on increasing saltwater marsh resilience and planting trees inclusively in urban communities. In the future, Mr. Bamford looks forward to seeing IR/ B U efforts such as directly pumping maintenance dredge from channels to wetland sites; continuing MPA and MDE collaboration to address barriers to beneficial use; and pursuing shared investment in planning, permitting, and design for B U projects in the Patapsco.

5.0 Announcements and Adjourn

Mr. Moulden alerted the group that the next IRC meeting will be held in early February 2026. Ms. Gilde reminded members to register for the Annual Meeting being held on December 5, 2025.