



2017

**Annual Report to the Dredged Material
Management Program (DMMP) Executive
Committee**

Implementation of the Dredged Material Management Act of 2001

Activities and Recommendations

PREPARED BY THE DMMP MANAGEMENT COMMITTEE

Approved by the Management Committee November 3, 2017

Executive Summary

This Annual Report presents an overview of the accomplishments of Maryland's Dredged Material Management Program (DMMP) during 2017 and provides recommendations for 2018. It is organized by the key topic areas that the Maryland Department of Transportation's Maryland Port Administration (MDOT MPA) believes are fundamental to the ongoing success of the program.

Capacity, Authority, and Funding:

Timely development of additional dredged material management options continues to be crucial to maintain the Port of Baltimore's marine highway/navigation channels. MDOT MPA has a 20-year plan for dredged material management, but some planned projects face property acquisition, funding, permitting, federal procedural requirements or other impediments to implementation. Innovative reuse is moving toward the desired one-third of annual Harbor dredged material management capacity.

Capacity for the main Chesapeake Bay channels when Poplar Island and its expansion are full relies on construction of the Mid-Chesapeake Bay Island project. This project faces anew and unexpected federal procedural requirement and stiff competition for federal funding in the face of many new project authorizations that were included in the federal Water Resources and Reform and Development Act (WRRDA) of 2014 and the Water Resources Development Act (WRDA) of 2016, federal budget reductions, and changing federal budget priorities.

MDOT MPA continues to reach out directly to key leadership at the U.S. Army Corps of Engineers (Corps) and the federal Office of Management and Budget (OMB), and is working diligently through the American Association of Port Authorities (AAPA) regarding the Corps budget strategy for prioritizing federal investments in new navigation infrastructure, potential new performance measures to prioritize funding for maintenance dredging, and WRRDA 2014 and WRDA 2016 implementation guidance.

Program Management: MDOT MPA is working closely with the Corps' Baltimore District office as that District updates its own 20-year Dredged Material Management Plan. This plan will act as a roadmap for timely and quality project delivery for the Port of Baltimore for the next 20 years. The updated plan aligns well with MDOT MPA's 20-year DMMP plan. The final plan was approved by Corps Headquarters on October 31, 2017.

Innovative and Beneficial Use: The strategy updated in 2014 maintains the long-term goal of recycling at least 500,000 cubic yards (cy) of dredged material annually. An interagency workgroup was formed in 2015 and submitted its recommendations to the Executive Committee in 2016. These recommendations were implemented in 2017: the Maryland Department of Environment (MDE) issued the Innovative Reuse & Beneficial Use Guidance Document in August 2017; in June 2017 the Governor issued an Executive Order recognizing dredged material as a valuable resource having vast opportunities for reuse; developed a tagline, video, infographic, social media presence; and the workgroup advised that no further statutory or regulatory updates are needed at this time. MDOT-MPA and MDOT-SHA executed an agreement to perform geotechnical and environmental testing to potentially support revision of certain MDOT-SHA materials specifications.

Stakeholder Engagement: Public outreach continues to be a critical component of the overall DMMP success story. Efforts in 2017 focused on expansion of the Cox Creek Dredged Material Containment Facility (DMCF) and reopening of the Pearce Creek DMCF. MDOT MPA has continued to strengthen the overall outreach program to give the public a deeper understanding of the issues, encourage contributions of new ideas, and engage new stakeholders. During 2017, MDOT MPA engaged directly with various DMMP stakeholder committees to delve further into key issues to gain a better awareness of stakeholders' views and opinions.

Baltimore Harbor Projects: MDOT MPA worked with the Maryland Department of Natural Resources (DNR) and the Hart-Miller Island (HMI) Citizen's Oversight Committee (COC) to develop the HMI long-term management plan. The Cox Creek and Masonville DMCFs are the only options currently available for placement of Harbor dredged material, and both received inflow in 2017. MDOT MPA has commenced work on expanding the Cox Creek DMCF onto MDOT MPA-owned uplands adjacent to the existing DMCF by demolishing the structures on the upland portion of the site, and is also exploring acquisition of the adjacent Cristal USA site. MDOT MPA continued remediation and habitat restoration in Masonville Cove. MDOT MPA and Baltimore City are collaborating on trash interceptor mitigation projects. MDOT MPA remains interested in Coke Point as a potential location for a DMCF. Implementation of the Confined Aquatic Disposal (CAD) pilot project continued with the placement of dredged material in the cell in early 2017.

Chesapeake Bay Channels and Placement Sites: The Corps of Engineers awarded a construction contract for the second phase of the Poplar Island Expansion in 2017. Placement needs beyond those met by Poplar Island Expansion are planned to be addressed by longer-range plans for the Mid-Chesapeake Bay Islands project. Design of this project has been stalled by a new and unexpected federal procedural requirement and lack of funding.

Upland Sites - Chesapeake and Delaware (C&D) Canal: MDOT MPA and the Corps' Philadelphia District are collaborating on reopening the Pearce Creek DMCF for placement of material dredged from the approach channels to the C&D Canal. The District has successfully installed an impermeable liner and the DMCF is ready to accept dredged material during the 2017/2018 dredging cycle. MDOT MPA is funding a new water supply system to communities near the DMCF. Residents are actively being hooked up to the water supply system and all homes are expected to be connected by May 2018.

Contingency Plan – Ocean Placement: Ocean placement of Bay sediments in an existing ocean site is an alternative that is included in the Maryland DMMP as a contingency option if other placement options are not available. The U.S. Environmental Protection Agency (EPA) concurred with the ocean placement option for each of the Upper Bay Channels for the period 2014 to 2017. This concurrence expired on October 2, 2017. The MDOT MPA will be requesting an extension to the expiration of the existing concurrence from the USEPA to maintain ocean placement as an option until the next testing event is completed. Prior to use of this option, the Corps would be required to complete an Environmental Assessment and provide public notice to Maryland and Virginia.

Projected New Work Dredging: Several significant projects will require new work (i.e., not maintenance) dredging in the future. These include completion of the Baltimore Harbor and Channels 50-foot Project to its Congressionally authorized widths within the Chesapeake Bay, as well as possible dredging for expansion of existing private terminals and potential future public and private marine terminals. New work projects will increase the need for additional placement capacity.

Recommendations for 2018

- Continue with the implementation of the HMI North Cell Habitat Development Plan including sediment liming, construction of the deep pool, and vegetation establishment.
- Work with the federal government to support sufficient funding and beneficial policies for the Corps' dredging program serving the Port of Baltimore, emphasizing the necessary funding needed for the Poplar Island Expansion and Mid-Bay site design. Engage in continued coordination efforts with the Corps at the District, Region, and Headquarters levels, the Assistant Secretary of the Army for Civil Works, and the OMB on dredging and dredged material management funding requirements, approvals, and planning to meet the current and long-term needs of the Port of Baltimore.
- Pursue federal Executive and Legislative Branch remedies to avoid deauthorization or to extend the authorization of the Mid-Chesapeake Bay Islands project.
- Work with the Corps, directly and through AAPA, to ensure that the Corps' implementation of WRRDA 2014 and WRDA 2016 is in line with Maryland's understanding of the intent of the legislation.
- Work closely with the Corps' Baltimore and Philadelphia Districts to ensure their complete understanding of the Port of Baltimore's expected business growth and development and the timeframe within Maryland DMMP plans, so that the plans and schedules are approved, fully coordinated, and available funding is optimized.
- Work with the Corps and Virginia agencies to address questions related to overwintering female crabs and the Virginia channels dredged material placement sites.
- Focus on planning beyond the 20-year time frame as MDOT MPA continues to develop its DMMP, including identification of refined data and updated information needed to inform and support long-term sustainable dredged material management options.
- Continue to review and evaluate the 2011 Harbor Team recommendations (See Appendix 5) and advance where feasible. Based on additional studies and more recent stakeholder feedback, the recommendations to be pursued in 2018 include:
 - Implement the Cox Creek Expanded (CCE) Project on MDOT MPA owned property (Stage 1 Expansion).

- Pursue acquisition of the Cristal USA property for CCE Stage 2.
 - Complete post-placement monitoring of the Confined Aquatic Disposal (CAD) Pilot Project and begin evaluating the potential future of CAD as a dredged material management option.
 - Assess innovative reuses of dredged material with a goal of innovatively reusing at least 500,000 cubic yards per year by 2023.
 - Advance innovative and beneficial use by continuing to implement the 2014 Revised IR Strategy, with a focus on planning and implementing one or more small volume demonstration projects and conducting testing in partnership with the Maryland Department of Transportation State Highway Administration.
- Maintain the schedule for the reopening of the Pearce Creek DMCF, currently expected during the Fall/Winter of 2017, and the installation of a new drinking water supply system for nearby residents, currently expected by the end of May 2018. Continue to provide timely and transparent information to project partners and community residents throughout project development.
 - Continue to increase the public's engagement, understanding, and support of Maryland's DMMP through strategic outreach and education to the communities, government agencies, non-government organizations, businesses, and schools near project sites. Incorporate stakeholder feedback and input into the DMMP planning process. Build upon existing partnerships and develop new partnerships with DMMP stakeholders. Grow awareness of and support for the dredging program, especially with younger audiences, through increased use of social media and other innovative communications tools.

2017 Annual Report Narrative

Maryland's Dredged Material Management Program is a rolling 20-year plan outlining the management of the State's dredging requirements, the need to regularly remove sediment from the Port of Baltimore's shipping channels and for adequate placement capacity of dredged material or alternative management solutions, such as reuse. Because of the 20-year timeframe of the DMMP, the complexity of the program, and need for coordination with multiple parties, changes generally occur incrementally and the program is adjusted as necessary. This report is provided annually by the Management Committee to inform the Executive Committee of the year's accomplishments as well as to highlight future challenges and opportunities for the DMMP with specific recommendations for the coming year. Memberships of the Executive Committee and the Management Committee are shown in Appendices 2 and 3, respectively.

Maintaining the shipping channels is critical to the continued success of the Port of Baltimore. Approximately 4.34 million cubic yards (mcy) of sediment must be dredged annually to maintain federal channels and anchorages at their authorized depths and widths, and to ensure reliable navigation for vessels transiting the Port of Baltimore. MDOT MPA and private sector partners also dredge another 0.8 mcy annually for maintenance, new work, and expansion projects. federal new work projects are estimated at 0.1 mcy of material per year. Altogether, MDOT MPA, private sector, and federal maintenance dredging, new work dredging, and expansion dredging needs are estimated at 5.24 mcy per year, a total of about 105 mcy over a 20-year planning horizon. All dredged material must be placed in approved placement sites or innovatively/beneficially used.

MDOT MPA's public-private partnership agreement with Ports America Chesapeake has positioned the Port of Baltimore to attract the potential cargo growth associated with the Panama Canal expansion. It is critical that the Port of Baltimore have sufficient dredged material placement capacity to support maintenance of its 50-foot channel in terms of depth and width to capitalize on that anticipated growth and to maintain existing business.

MDOT MPA is fortunate to have an active, engaged constituency of DMMP advisory committees and stakeholders that are integral to the State's DMMP. These include private sector businesses, citizens, academia, government agencies, elected officials, and non-government organizations.

The Port of Baltimore generates about 13,650 direct jobs; about 127,600 jobs are linked to Port activities. This represents \$2.9 billion in salaries and \$2.2 billion in business revenues. Among U.S. Ports, Baltimore ranks 9th for the total value of foreign cargo and 14th for foreign cargo tonnage (2016, the most recent data available).

I. KEY ISSUES

This report of the Management Committee provides updated information on 2017 DMMP activities. In reviewing the year's work, it is clear that several major items remain critical to the success of the DMMP and should be brought to the attention of the Executive Committee for the

purpose of planning strategically for the year ahead. This section highlights these significant issues.

A. Capacity

Maritime dredging is driven by the needs and schedules of the Port's public and private sectors and local governments throughout the entire Harbor and Chesapeake Bay channel system. Maintaining capacity for placement of dredged material from both Harbor and Bay channels continues to be a significant challenge to the Maryland DMMP. Harbor material that was previously placed in the 1,140-acre HMI DMCF is now placed in two DMCFs that are each about 100 acres in size. The smaller sizes of the sites mean that they have limitations on annual placement capacities that MDOT MPA has not previously experienced. Additionally, both Harbor sites have nutrient discharge limits that HMI did not have, which present water management challenges. Ensuring that adequate capacity is available for sediments dredged as part of navigation maintenance is vital to the continued success of the Port of Baltimore.

Maximizing the efficient use of the current and future capacities at the Harbor sites is crucial. Due to the smaller surface areas and the new permit discharge limits, the Harbor sites do not allow for dewatering and consolidation operations in the same way that MDOT MPA experienced with HMI. To allow for dewatering of the site, drying and consolidation (known as crust management), are essential. MDOT MPA and the Maryland Environmental Service (MES) have been actively managing water in the Cox Creek DMCF to identify best management practices to reduce water retention and increase capacity recovery; they continue to pursue methods to increase available capacity at the sites. Recirculation of water during and discharge immediately after the 2017 inflow event allows for longer crust management time throughout the year. This, in addition to other opportunities to either generate additional capacity through site expansion, or to divert dredged material to innovative reuse strategies or other placement options such as beneficial reuse, are essential to sustainable implementation of the overall DMMP.

In addition to dredging quantities from annual maintenance, new work dredging projects are also expected in the foreseeable future. These projects will stretch the limits of the small Harbor sites even more than routine maintenance projects. The Corps' Baltimore District is completing a study for potentially widening the 50-foot channels to their currently authorized widths. This study is expected to be completed in 2018. The study has progressed far enough to determine that, while Harbor channels (west of the North Point-Rock Point line) will not be widened, generally channel widths in the lower Bay would increase from 800 feet to 1,000 feet and main channel widths in the upper Bay would increase from 700 feet to 800 feet. Projects such as this will accelerate the timeframe in which additional placement capacity is needed for the Bay dredged material.

Both Harbor Sites, Masonville DMCF and Cox Creek DMCF, are undergoing active construction over the next several years to achieve design capacity (Masonville) or to increase overall capacity (Cox Creek Expansion) for dredged material. More capacity will still be necessary in the future, and sites that are best suited for creation of new DMCFs are scarce. In addition, it is important that existing and expanded sites are operated in the most efficient manner to ensure optimal capacity.

Innovative reuse options are still in the planning stage and, if feasible, will likely be developed incrementally over time to achieve the goal of providing one-third of the annual capacity needed for Harbor material.

The overall strategy to accommodate the maintenance and new work dredging for the next 20 years is charted in Appendix 4 for annual approval by the Executive Committee so that options can be developed and made operational as needed.

***Challenge:** Although the DMMP identifies projects with sufficient capacity for 20 years out, property acquisition, construction funding, permitting, and Federal procedural requirements pose significant challenges to timely and successful implementation of those projects within the planning horizon.*

B. Budget Priorities and Funding

Budget cuts, federal law, and policy issues continue to impact the availability of state and federal funds for maintenance and new work dredging and for existing and future placement capacity. One or more of these issues affects every aspect of the DMMP.

Constrained federal budgets coupled with a significant navigation back-log nationally are resulting in fewer funds for important dredging projects, studies, construction of environmental improvements, and containment projects across the nation. While WRRDA 2014 and WRDA 2016 (WRDA 2016 is part of Water Infrastructure Improvements for the Nation enacted in 2016) include many beneficial provisions, additional project authorizations have significantly increased the demand on the Corps' construction budget.

MDOT MPA has expressed concerns to the Corps about some of the methods that may be employed in the Corps' proposals for performance-based decision making for funding of dredging projects. The Port of Baltimore and its partners are committed to working cooperatively with the Corps on all policies and procedures to ensure the continued sustainability of safe and reliable navigation channels.

***Challenge:** MDOT MPA must continue to monitor the Corps of Engineers' budget very closely to identify any problem areas that could adversely affect vital maintenance and new work projects for the Port's navigation infrastructure. The Port of Baltimore must continue its enhanced advocacy for reasonable and fair consideration in the application of federal budgeting strategies.*

II. PROGRAM MANAGEMENT

Maryland's DMMP was created in recognition of the importance of the long-range planning and collaboration necessary to keep the dredging program on course and the maritime industry flourishing in the State of Maryland. A committee hierarchy (see Appendix 1) was developed to ensure the success of this complex process. Committee members represent various federal and state agencies, port-related businesses, academia, and environmental and citizen groups. The broad-based committee structure works cooperatively to study, evaluate, and proactively plan to ensure that dredging needs and dredged material management options for today and the future will be met.

A. Dredged Material Management Plans

Maryland's DMMP and the Corps' Dredged Material Management Plan coexist and are mutually supportive. Collaborative efforts have greatly helped in the development and implementation of both plans. During 2017, the Corps continued updating its Dredged Material Management Plan and Corps Headquarters approved the final Dredged Material Management Plan on October 31, 2017. Maintaining strong communication and information sharing between Maryland and the Corps, as well as with DMMP stakeholders, will be essential throughout implementation of the federal DMMP. Such cooperation can result in mutual efficiencies and success, as projections for dredging needs and dredged material placement capacity can be accurately tied to forecasted Maryland business growth and customer needs.

The Management Committee believes that the structure and operation of the Maryland DMMP as a collaborative and transparent process with the Port's stakeholders has been successful and should be maintained and enhanced as necessary in 2018 and beyond.

***Challenge:** Maryland and the Corps must continue to work cooperatively in Maryland's DMMP activities as well as in implementation of the Corps' updated Dredged Material Management Plan to ensure timely information sharing, resolution of issues, development of innovative ideas and approaches, and identification of mutually beneficial outcomes.*

B. Achieving New Bay Restoration Goals

EPA development of total maximum daily load (TMDL) requirements for the Bay and its tributaries will increase operational and budgetary needs of both MDOT MPA and Corps facilities in 2017 and beyond. In 2010, EPA and Bay watershed states began the process of establishing Watershed Implementation Plans (WIPs) to achieve target levels for nutrient (nitrogen and phosphorus) and sediment contaminants as documented in the Chesapeake Bay TMDL. Port and dredging facilities have been assigned target load reductions through WIPs that were finalized in early 2012. All pollutant sources are being considered in the WIPs. This means, in addition to the direct discharges from the placement facilities, storm water loadings from existing marine terminals will also have to be reduced or have their loads offset. Additional TMDLs for polychlorinated biphenyls (PCBs), metals, and trash have been developed or are in development. In 2014, MDOT MPA's TMDL Work Group finalized a report detailing concepts to achieve the discharge permit reductions and the need for additional data collection. In 2017, MDOT MPA continued evaluating the nutrient reduction concepts identified in the 2014 report,

by conducting recirculation and mass balance studies at the Cox Creek DMCF. Data collected over several years will be analyzed to determine the effectiveness of recirculation as a nutrient reduction best management practice.

***Challenge:** Current and future TMDLs have the potential for requiring additional monitoring, treatment, and/or offset purchases and will need to be considered in setting budgets into the future.*

III. INNOVATIVE REUSE AND BENEFICIAL USE

Implementation of the 2014 Revised Innovative and Beneficial Use Strategy continues to be an MDOT MPA priority in planning for sustainable dredged material management solutions. Several of the Strategy's action items are advancing and, due to strong coordination and collaboration with key partners and stakeholders, opportunities for innovative reuse demonstration projects are imminent.

Over the course of this year each of the MDOT MPA-led Interagency Regulatory Workgroup's 2016 policy recommendations were implemented and completed. Specifically, they are:

- The MDOT MPA's Innovative Reuse (IR) Video and Infographic, with the popular tagline *Sediment to Solutions: Channeling Innovation*, continue to be widely distributed to the public, stakeholders and partners via email, online publications, in person, and over social media. These outreach and education materials, as well as the overall IR campaign, were awarded the Award of Excellence and Award of Distinction, respectively, as part of AAPA's 2017 Communications Awards Program.
- In June 2017 Governor Hogan issued Executive Order 01.01.2017.13 recognizing dredged material is a valuable resource having vast opportunities for reuse, directing MDOT MPA and MDE to develop regulatory guidance and technical screening criteria for innovative reuse of dredged material, and calling on state agencies to be a leader in IR where economically reasonable to do so and in conformance with all environmental regulations.
- In August 2017, MDE finalized the Innovative Reuse and Beneficial Use of Dredged Material Guidance Document and Technical Screening Criteria, a major development advanced by the Workgroup. This MDE guidance also recognizes existing regulatory permit authorities that can facilitate innovative reuse of dredged material in Maryland.
- In September 2017, the Workgroup advised the DMMP Management and Executive Committees that it does not recommend exploring statutory or regulatory changes or updates at this time, thereby completing the efforts of the Workgroup; however, should there be a need to reevaluate the statute or COMAR in the years ahead as IR progresses, the Workgroup could be reconvened to recommend any further policy changes as necessary.

Over the course of the summer MDOT MPA partnered with Mahan Rykiel and Associates, a local landscape architecture firm, and Professor Brian Davis with Cornell University and the Dredge Research Collaborative, on a 10-week design research collaboration and internship. Four graduate landscape architecture design students focused on the Port of Baltimore's dredging program and opportunities for reusing the sediment removed from the shipping channels in a way that would restore ecosystems, provide climate change resilience, and allow communities access to environmental restoration areas. Final design concepts were presented at the 2017 DMMP Annual Meeting. With high impact visuals and technically sound graphics, the designs helped MPA tell the story of what is possible with dredged material in a way that we have not communicated previously.

The MDOT State Highway Administration (SHA) continues to play an important role in the research and review of blended dredged material to be used in manufactured topsoil or engineered fill that could then be approved and utilized in MDOT SHA or MDOT SHA-related projects. Important geotechnical and environmental testing and studies remain underway, with results expected throughout 2018. This information will be critical to updating and revising certain MDOT SHA materials specifications, which should further facilitate reuse of dredged material by state agencies and industry alike.

An economic valuation analysis of reclaimed placement capacity was completed in early 2017 and the DMMP Committees were briefed on this analysis over the course of the year.

Several small volume demonstration projects with external partners, using dewatered dredged material as either fill or daily landfill cover, are in the planning stages and implementation is expected in the near term. Similarly, a larger volume demonstration project on MDOT MPA-owned property at Hawkins Point is currently in the planning and design phase and implementation is expected in 2018.

***Challenge:** Identification of adequate space to implement IR on a meaningful scale in the near- and long-term; completion of necessary geotechnical and environmental testing to warrant updates to agency policies that historically have prohibited use of dredged material; implementation of demonstration projects to establish several models of success in terms of regulatory, geotechnical, environmental and public approvals.*

IV. STAKEHOLDER ENGAGEMENT

A. Community Outreach

Stakeholder understanding and commitment are crucial to DMMP success. The MDOT MPA continues efforts to increase its visibility and the public's knowledge of the Port of Baltimore, its operations and projects, and their importance to the State of Maryland. As part of its continuing efforts to improve collaboration, inclusiveness, and transparency with its partners, as well as to improve outreach, Port education, communications, and visibility of Port programs, the MDOT MPA has increased its use and promotion through social media. Social media use has increased by 110% and has increased subscribers to the GreenPort eNewsletter by approximately 8%.

In 2017 more than 14,775 (as of September 30, 2017) people had the opportunity to learn about the Port of Baltimore interactively by visiting DMCFs and participating in off-site events, such as community events, meetings, conferences, and educational programs. This included many new stakeholders participating in tours of DMCFs.

In addition to continued work with various DMMP oversight and advisory committees, the MDOT MPA participated in new community outreach events, such as exhibiting at various Earth Day events near the project sites, in order to increase citizen awareness of the Port and its environmental stewardship efforts.

The MDOT MPA also launched an outreach campaign, “Sediment to Solutions: Channeling Innovation,” by creating a video, now available on [YouTube](#), and an [infographic](#) to promote awareness and encourage public support for the beneficial and innovative uses of dredged material. The American Association of Port Authorities (AAPA) recognized the video with an Award of Excellence, the Infographic with an Award of Distinction, and the overall communications campaign with an Award of Distinction. To continue to build public awareness and support of dredged material reuse and the Port’s environmental initiatives, the MPA also hosted a photo contest on social media – requesting the general public to submit environmental/wildlife photos taken at the various Port sites. Over 60 entries were received and the winning photo and several honorable mentions were featured in the October/November Port of Baltimore magazine and on the Port’s social media sites.

The Pearce Creek Implementation Committee provides a valuable means of engaging with the surrounding communities during the construction of the new water system and the reactivation of the Pearce Creek DMCF. The committee brings together MPA, the Corps, Cecil County, the Town of Cecilton and the leadership of communities surrounding the Pearce Creek site for bi-monthly updates about project progress.

MPA’s commitment to community, education, and the environment continues to be on display at the Masonville site, where community members can visit the Masonville Cove campus and participate in year-round programs hosted by the Living Classrooms Foundation and the National Aquarium. Assisted by the U.S. Fish and Wildlife Service, the Urban Wildlife Refuge Partnership has provided expanded opportunities for environmental stewardship through internships, wildlife management, and funding. Activities continue through the Hispanic Access Foundation and other partners at Masonville Cove to connect with Baltimore City church leaders and engage the local Hispanic church congregations in education and conservation activities centered on urban watershed issues and the monarch butterfly and its habitat. MPA is actively supporting the Masonville Cove stakeholders as they explore partnership opportunities with other state and federal agencies that can help support the Masonville Cove Environmental Education Center campus and programs.

Tours at Maryland’s dredged material placement sites have proven to be excellent teaching tools for both school students and adults. Meaningful field experiences at Hart-Miller Island, Masonville Cove, Poplar Island, and Swan Creek (at Cox Creek) help students meet environmental literacy graduation requirements as set forth in Governor Hogan’s Executive Order on Project

Green Classrooms. Through hands-on field activities, teachers and students discover how MPA plays a crucial role in habitat restoration. In 2017, 183 terrapin hatchlings from Poplar Island were assigned to classrooms in several counties and Baltimore City to give students the opportunity to participate in real scientific research.

This summer, MPA partnered with a local landscape architecture firm and their four graduate student interns to develop conceptual designs for beneficially and innovatively reusing of dredged material as a resource to create civic open space, living shorelines, resilient landscapes and economic sustainability. As part of the program's outreach and stakeholder engagement activities, the interns met with several local government agencies, business and community stakeholders to tour potential project sites, learn about the DMMP and to solicit their vision on how dredged material could be repurposed and provide social, ecological and economic value. The interns' designs were presented at the DMMP 2017 Annual Meeting and will provide MPA with a useful tool in communicating a new vision for reuse of Harbor channel material to the public.

MPA coordinated with the Baltimore Port Alliance to organize its first workforce education workshop on the Port's future workforce needs. Additionally, educators and industry job trainers received a firsthand look at the importance and scope of the Port of Baltimore through the annual week-long summer externship organized by the Baltimore Port Alliance Education and Outreach Committee, working collaboratively with Anne Arundel Community College and the Southeast Maritime and Transportation Center (SMART) of Norfolk, VA. Fifteen participants from Maryland, Virginia, Texas, Louisiana and Florida spent time with 15 maritime professionals, learned about careers in and training pathways to the maritime industry, toured the vast Port infrastructure and witnessed the coordination needed to deliver cargo between ports.

B. MPA and Corps Collaboration

Given the continued significant challenges facing the State's DMMP and Corps' Dredged Material Management Plan, the Management Committee continues to encourage regular executive level strategy meetings between MPA and the Corps.

Shortfalls in the Corps' dredging budgets are affecting channel reliability at a critical time as larger and wider vessels with drafts up to 50 feet are calling on the Port of Baltimore more frequently. Full availability of authorized channel depths and widths is critical to safe navigation. The larger the vessel, the smaller the margin for navigational error. Groundings could have significant adverse effects on the business of the Port and the ecology of the Bay and those who use it. This situation requires close coordination and collaboration among MPA, the Corps, and the Association of Maryland Pilots to minimize negative impacts on navigation and avoid unsafe conditions on our marine highway. Throughout 2017, MPA continued to employ a coordinated outreach strategy to all levels of the Corps including quarterly meetings with the Baltimore and Philadelphia Districts and the North Atlantic Division. MPA also meets annually with Corps headquarters, the Assistant Secretary of the Army for Civil Works, and the OMB. The purpose of these meetings is to maintain relationships and updated communication with all levels of decision makers within the Corps and the agencies responsible for federal budget recommendations. Additionally, working through AAPA, MPA continues to be heavily engaged with the Corps in budget strategy and its implementation of WRRDA 2014 and WRDA 2016. These lines of communication are important to establishing a greater understanding of the Port of Baltimore's

business plans, local, regional and national economic impacts, and expectations for growth that drive the needs of the DMMP.

In 2017 MPA received nearly \$5.25 million in federal Energy Transfer Ports funds as allocated through Section 2106 of WRRDA 2014. These funds are being used to perform maintenance dredging to improve access to the federal navigation channels. It is expected that this work will be complete in early 2018.

***Challenge:** With ever increasing constraints on federal funds and new federal agency procedures and policies, coordination among MPA, the Corps, Port customers, stakeholders, and the Pilots must remain strong. In addition, the MPA must continue to communicate with all levels of decision makers within the Corps at the District, Division, and Headquarters levels as well as with the agencies responsible for federal budget recommendations.*

V. BALTIMORE HARBOR PROJECTS

A. Hart-Miller Island

The South Cell of HMI opened for public access for the second season in May 2017. Under an interagency agreement among MPA, DNR, and MES, the success of the South Cell public access will be evaluated over a five-year period to document visitor usage, need for future amenities, and identification of opportunities for local partnerships to implement environmental education programming. The agencies will continue to work with the HMI Citizen's Oversight Committee on the implementation of the agreement. There have been 4,036 hikers, campers, bikers and park program attendees (from May 13, 2017 through September 30, 2017) in the HMI South Cell.

Liming the sediments in the North Cell in preparation for habitat development continued throughout 2017. MES continues working with MPA to resolve the issue of how to manage water in the North Cell, which continues to be a challenge to development activities. MES is developing short term and long-term pH management strategies for water management. In conjunction with the University of Maryland Center for Environmental Science, MES established North Cell vegetation test strips to determine which vegetation will grow best in the current conditions (grasses and woody species). As a part of the minimum maintenance design, construction of a deep pool in the southeastern corner of the North Cell to help facilitate water management began and is expected to continue throughout 2017.

B. Cox Creek

From April to May 2017, 591,000 cy of dredged material from the Ferry Bar and Brewerton Angle was placed in the Cox Creek DMCF.

At this time, Cox Creek remains the likely location for a potential Innovative Reuse facility.

C. Masonville

In the 2016-2017 dredging cycle, approximately 209,000 cy of dredged material was placed in the Masonville DMCF.

Remediation and habitat restoration continued in Masonville Cove. Planting of approximately 11 acres of trees should be completed in 2017-2018 in the Masonville Cove as mitigation for impacts to the Critical Area. Additional work in Masonville Cove included clearing invasive vegetation, hauling soil, and capping. Capping activities continued in Access Zone 3, and planting is expected to occur there in the fall of 2017.

In 2014, MPA coordinated with DNR to construct an eel passage mitigation project at Daniels Dam; 2017 saw continued increases in utilization of the passage by eels and other wildlife. Another mitigation project in partnership with DNR, shad and herring stocking, completed its fifth year in 2017.

This year MPA began construction of two additional Masonville mitigation projects: trash interceptors located at the Dundalk Marine Terminal and in Masonville Cove. Both projects are expected to be completed by early 2018.

MPA continues to coordinate with several partners on the development of water quality improvement projects as part of the mitigation package for the Masonville DMCF.

D. Coke Point

The Harbor Team recommended Coke Point as a third potential DMCF in 2003, a recommendation that was reaffirmed in 2011 and MPA completed a Draft Feasibility Study Report for Coke Point in 2012. As of 2017 however, the property owner Tradepoint Atlantic, has other tentative plans for the Coke Point site. Lines of communication between MPA and Tradepoint remain open with increased frequency of communications to discuss dredged material management issues.

E. Cox Creek Expanded and Confined Aquatic Disposal (CAD)

As a backup to Coke Point, the Harbor Team 2011 Recommendations included a combined Cox Creek-Millennium placement option, and a CAD pilot project.¹

In 2017, MPA continued demolition of existing on-site buildings and design for the expansion of the Cox Creek DMCF onto adjacent MPA owned property. Building demolition is expected to be completed by late 2018. The design of a new dike, including extensive geotechnical investigations and coordination with MDE, began in early 2016. The design for the base dike is expected to be complete in January 2018, and the design for the +60' dike is scheduled to be complete by March 2019. Outreach to interested stakeholders is continuing, and the COC held regular meetings throughout 2017. MPA hosted a Public Meeting to update the community about the status of the project. There has been no public opposition to raising the existing DMCF dikes. Separately, MPA

¹ CAD is defined as excavation of cells beneath existing navigation channels or anchorages by dredging in areas where there is commercial-grade sand and gravel underneath the channels or anchorages. These cells would be backfilled with material from maintenance dredging. In most cases, overburden material would have to be removed to access the sand and gravel. This overburden material would be placed in a dredged material containment facility. The commercial-grade sand and gravel would be used in upland construction projects or possibly in beneficial use projects such as capping contaminated areas elsewhere in the harbor.

is exploring the possible acquisition of the Cristal USA, Inc. site (formerly known as Millennium Inorganic Chemicals) adjacent to MPA's Cox Creek property. Active discussions between MPA and Cristal USA, Inc. have been ongoing in 2017.

The CAD pilot project cell that was constructed in October 2016, was filled by the Corps using dredged material from maintenance dredging of the Ferry Bar channel in February 2017. Nutrient and turbidity monitoring occurred during the February filling activities. To monitor the project and ensure the cell is actively confining the placed material, consolidation monitoring will occur through February 2018.

VI. CHESAPEAKE BAY CHANNELS AND PLACEMENT SITES

A. Paul S. Sarbanes Ecosystem Restoration Project at Poplar Island and Poplar Island Expansion

The Paul S. Sarbanes Ecosystem Restoration Project at Poplar Island, generally known as Poplar Island, continues to be a national showcase for the beneficial use of dredged material. Although the project remains far from complete, significant environmental benefits have already been achieved. Poplar Island habitat hosts a nationally protected migratory waterfowl, the American black duck, and two ground nesting colonial water birds, the Common Tern and the Least Tern. On its list of rare threatened, and endangered animals, the Maryland Department of Natural Resources lists the Least Tern as "threatened" and, since 2016, the Common Tern as "endangered." Both tern species nest at Poplar Island which has been the most successful Common Tern nesting colony statewide for 2017. Altogether, over 200 different bird species have been identified onsite or just offshore. Additionally, Diamondback terrapins nest on the island. Also, researchers have shown that the restored wetlands support significantly higher abundances of monitored species than was observed in baseline remnant marsh surveys.

Habitat restoration continues with grading of future wetland cell, Cell 5AB near completion. Cell 5AB is an 83-acre cell that will open to the Bay through two natural inlets (no inlet structure) and will contain a 4-acre vegetated habitat island and a 4.4-acre pond.

During 2016-2017 dredged material inflow, Poplar Island received 1.1 mcy of dredged material, an estimated 0.4 mcy from the C&D Canal approach channel and approximately 0.7 mcy from the MD Bay Channels. No maintenance dredging inflows to Poplar Island are scheduled for the 2017-2018 dredging cycle.

Poplar Island remains the only placement option for sediments dredged from Bay channels located in Maryland waters south of Pooles Island. Sufficient funding was provided in federal fiscal year 2017 to continue construction of the Expansion, which will provide an additional 28 mcy of dredged material placement capacity. Working with all parties involved in the federal budget process to advocate for sufficient and sustained budgetary resources to continue the Expansion will be an ongoing focus for MPA in 2018 and 2019. The second contract for the lateral expansion was awarded in 2017.

The President's federal fiscal year 2018 budget presently includes \$36.25 million for Poplar Island and Poplar Island Expansion together, which is a significant and strong signal of support for the project, its numerous benefits, and the Port of Baltimore.

***Challenge:** MDOT and MPA need to work with all levels of the Corps, the federal OMB, and the Maryland Congressional Delegation to ensure sufficient funding in the Corps' budget in federal fiscal year 2018 and beyond to complete expansion of the Poplar Island footprint.*

B. Mid-Chesapeake Bay Island Ecosystem Restoration Project - James Island and Barren Island (Mid-Bay)

After Poplar Island and its Expansion have been fully utilized, another strategy for providing capacity needed for Bay channel dredged material is implementing other island protection and restoration projects in the Mid-Chesapeake Bay south of Poplar Island. If funded and implemented, Barren Island would be restored before James Island. The Mid-Bay project has the strong support of the Dorchester County government and local citizens.

In 2011, the Assistant Secretary of the Army for Civil Works (ASA(CW)) tied the advancement of the Mid-Bay project to completion and update of the federal DMMP. The project subsequently was authorized for construction in WRRDA 2014. The federal DMMP was approved by Corps Headquarters on October 31, 2017. Until just recently, MPA and the Corps Baltimore District understood that approval of the DMMP update would clear the way for the project to be considered for budgeting of preconstruction engineering and design (PED). However, Corps Headquarters has advised that there are some additional procedural steps required before the project can be budgeted for PED. MPA and the Management Committee are closely monitoring these developments to ensure that PED can be completed before project authorization expires. MPA is pursuing both Executive Branch and Legislative Branch remedies to avoid deauthorization of the project and to ensure that capacity at the project is available when capacity at Poplar Island and its Expansion is exhausted.

***Challenge:** MPA will need to work closely with stakeholders, federal decision makers and elected officials to ensure that the Mid-Bay project is available in a timely fashion to satisfy the WRRDA authorization requirements and meet dredged material placement needs.*

C. Upland Sites - Chesapeake and Delaware Canal

The C&D Canal is important to the Port of Baltimore as it provides shippers the shortest route to/from the Atlantic Ocean and is particularly favored by many auto-carrier ships making the journey between Baltimore and ports in New York/New Jersey and New England.

The Corps' Philadelphia District is responsible for maintenance of the upper Bay approach channels and the C&D Canal proper. That District owns the DMCFs along the approach channels and the Canal itself. The Philadelphia District has historically used the Courthouse Point and Pearce Creek DMCFs for placement of approach channel material. The Philadelphia District also utilizes local DMCFs along the Canal (including Bethel and Chesapeake City) for material dredged from the Canal proper.

In March 2016, MDE renewed for two years the Corps' WQC for the Pearce Creek DMCF. Installation of the liner was completed in 2017. The DMCF will receive inflow of dredged material in the 2017/2018 dredging cycle, which begins October 1, 2017. The Corps received approval from MDE on a groundwater monitoring plan in February 2017 and on a surface water discharge monitoring plan in October 2017, both of which are required by the WQC prior to the re-opening of the site.

MPA is funding a water supply line from the Town of Cecilton to properties within the Pearce Creek Service Area, or zone of influence of previous groundwater contamination. Extensive outreach has been ongoing and will continue in West View Shores, Bay View Estates, and Sunset Pointe. Construction of the transmission main (extends from the Town of Cecilton to the affected communities) and distribution main (extends from the transmission main to throughout the communities) began in 2016 and was completed in September 2017. Construction of the final component of the project, the on-lot hookups to residences, began in July 2017 with external on-lot work in Bay View Estates; all on-lot work is expected to be complete by spring 2018. Bottled water continues to be supplied to residents by the Corps and will continue until the residents are connected to the new water line.

Citizens and government agencies formed the Pearce Creek Implementation Committee in 2015 to share information and receive feedback on the progress of the project. The Committee continues to meet every two months in Cecilton. This forum and the outreach website (www.pearcecreekoutreach.com) remain important resources for residents and representatives of agencies alike to exchange information, ask questions and express concerns, and generate ideas in order to ensure timely responsiveness throughout every phase of both of these construction projects.

***Challenge:** Continued collaboration and coordination among the Corps, MPA, MDE, Cecil County, the Cecil County Health Department and citizens are needed to ensure that the DMCF liner and the water supply line are completed on time.*

D. Lower Bay Sites

Most ocean-going vessels travel to and from the Port of Baltimore through the southern approach commonly referred to as the 50-foot channel, a deep north-south route extending 150 miles from the Port of Baltimore to the Atlantic Ocean at Cape Henry, Virginia. The Lower Bay channels servicing Port-bound vessels include Cape Henry, York Spit, and Rappahannock Shoal. Placement capacity is adequate for the next 20 years. The placement sites include the Norfolk Ocean Disposal Site, the Dam Neck Ocean Disposal site, the Wolf Trap Alternate, and the Rappahannock Shoal Deep.

VII. CONTINGENCY PLANNING - OCEAN PLACEMENT

Placing dredged material from the Maryland Bay Channels at the Norfolk Ocean Disposal Site is an alternative that is included in the Maryland DMMP as a contingency option if other placement options are not available. Ocean placement of dredged material is regulated under Section 103 of

the Marine Protection, Research and Sanctuaries Act of 1972, which requires that any proposed placement of dredged material into ocean waters be evaluated using criteria published by EPA.

The EPA and the Corps' Baltimore District established a schedule for conducting triennial sediment testing as a requirement of maintaining authorization for ocean placement. The last round of triennial sediment testing was conducted in 2012 through 2013. On October 2, 2014 EPA sent correspondence to the Corps that concurred with the ocean placement option for each of the Upper Bay Channels for the period 2014 to 2017. This concurrence expired on October 2, 2017. The MPA will be requesting an extension to the expiration of the existing concurrence from the USEPA to maintain ocean placement as an option until the next testing event is completed. The next triennial sediment testing for ocean placement is scheduled for early 2018, with an updated concurrence anticipated in late 2018. The goal is to maintain the EPA and Corps authorizations that are necessary to allow the retention of the ocean placement option as a contingency component of the overall DMMP planning efforts.

If ocean placement is needed due to lack of other dredged material management options, the Corps would prepare an Environmental Assessment for the ocean placement option and release a public notice in both Maryland and Virginia. The Corps indicates that federal cost sharing would not be available for ocean placement, even if it is included as a viable option in its Dredged Material Management Plan. This means that MPA would have to pay the considerable additional costs for transporting dredged material from the current federal standard to the ocean site.

***Challenge:** MPA needs to continue regular testing to ensure that ocean placement is a viable contingency alternative, subject to other regulatory coordination and approvals.*

VIII. PROJECTED NEW WORK DREDGING

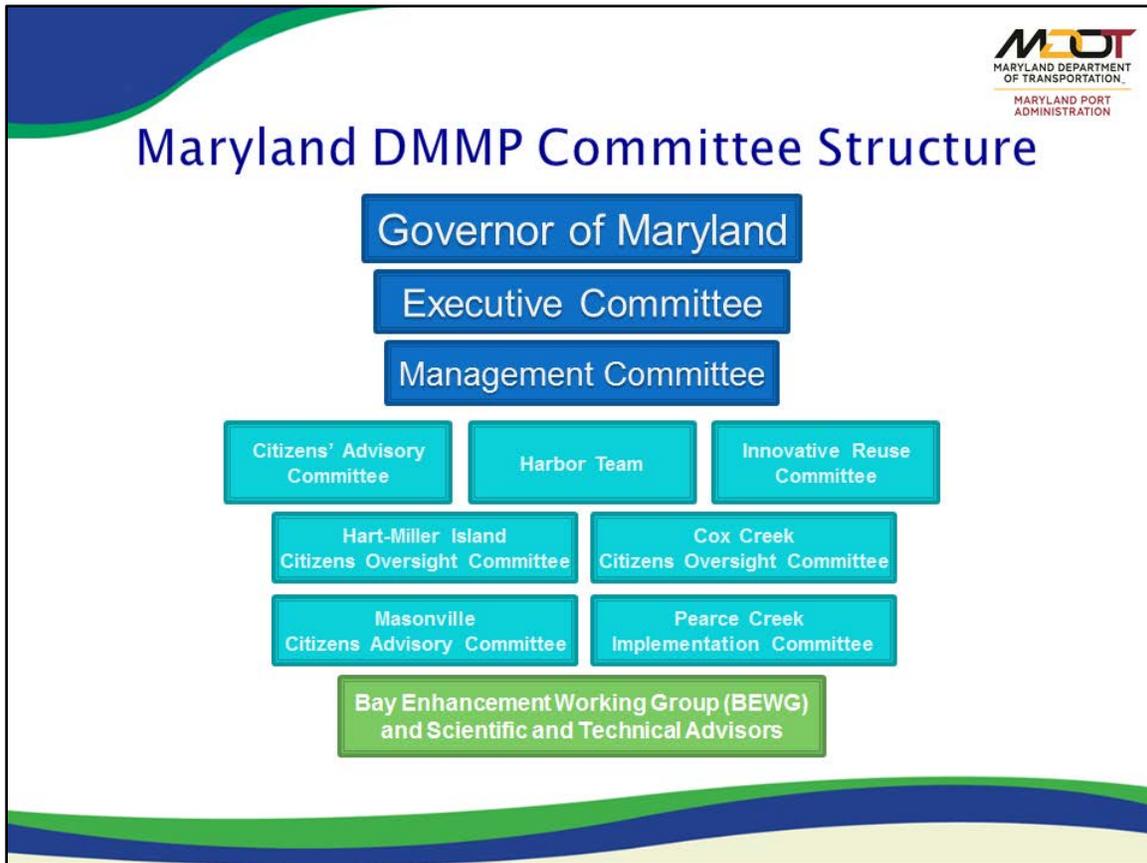
Several significant projects will require new work (i.e., not maintenance) dredging in the future. In February 2012, the MPA requested that the Baltimore District complete the congressionally authorized second phase of the Baltimore Harbor and Channels 50-foot project, i.e., bring some of the channels in this project from their current widths to their authorized widths. The Corps and MPA have collaborated on a Limited Reevaluation Report (LRR) to analyze the need for completing the widening. Generally, in the lower Bay, channel widths could increase from 800 feet to 1,000 feet and, in the upper Bay, main channel widths could increase from 700 feet to 800 feet. The study has progressed far enough to determine that the Harbor channels (west of the North Point-Rock Point line) will not be widened. This study is expected to be completed in 2018. Completion of the project would require dredging of approximately 7 mcy in Maryland and Virginia waters.

Future new work dredging may include modifications of channels, berths, and anchorages as cargo continues to grow. MPA also expects some private sector new work dredging for expansion of existing private terminals. Including the 7 mcy for completion of the 50-ft. widening, MPA estimates a total of 11 to 12 mcy of new work dredging over the next 20 to 30 years. The MPA has requested the Baltimore District to evaluate the potential deepening and widening of the West

Seagirt Branch Access Channel to complete a loop channel that would enable post-Panamax vessels. This project, if funded, would require dredging of approximately 2 mcy.

Challenge: *Sufficient dredged material placement capacity for new work dredging projects will be needed in order to meet the needs of a growing port and economy over the next 20 to 30 years.*

APPENDIX 1: ELEMENTS OF THE MARYLAND DMMP



APPENDIX 2: 2017 MEMBERS OF THE DMMP EXECUTIVE COMMITTEE

Chesapeake Bay Foundation

Alison Prost
Maryland Executive Director

DMMP Citizens' Advisory Committee Liaison

Francis Taylor
North Point Peninsula Council

DMMP Management Committee Liaison

Donald Boesch
University of Maryland Center for Environmental Science

Maryland Department of Natural Resources

The Honorable Mark J. Belton (Co-Chairman)
Secretary

Maryland Department of the Environment

The Honorable Ben Grumbles
Secretary

Maryland Department of Transportation

The Honorable Pete K. Rahn (Co-Chairman)
Secretary

U.S. Army Corps of Engineers

Colonel Edward P. Chamberlayne
District Engineer, Baltimore

U.S. Army Corps of Engineers

Lt. Colonel Kristen N. Dahle
District Engineer, Philadelphia

APPENDIX 3: 2017 MEMBERS OF THE DMMP MANAGEMENT COMMITTEE

Association of Maryland Pilots
Captain Eric Neilsen
Captain Jessie Buckler (alternate)

Baltimore Port Alliance
Rupert Denney

Chesapeake Bay Foundation
Doug Myers

DMMP Citizens Advisory Committee
Francis Taylor

EPA Region III
Sherilyn Lau

Maryland Department of the Environment
Matthew Rowe

Maryland Environmental Service
Roy McGrath

Maryland Geological Survey
Richard Ort

Maryland Port Administration
Chris Correale

Maryland Department of Natural Resources
Bruce Michael

Maryland Department of Transportation Policy & Governmental Affairs
Deborah Haynie

National Marine Fisheries Service
Kristy Beard

NOAA Chesapeake Bay Office
Vacant

Rukert Terminal Corporation
Steve Landess, P.E.

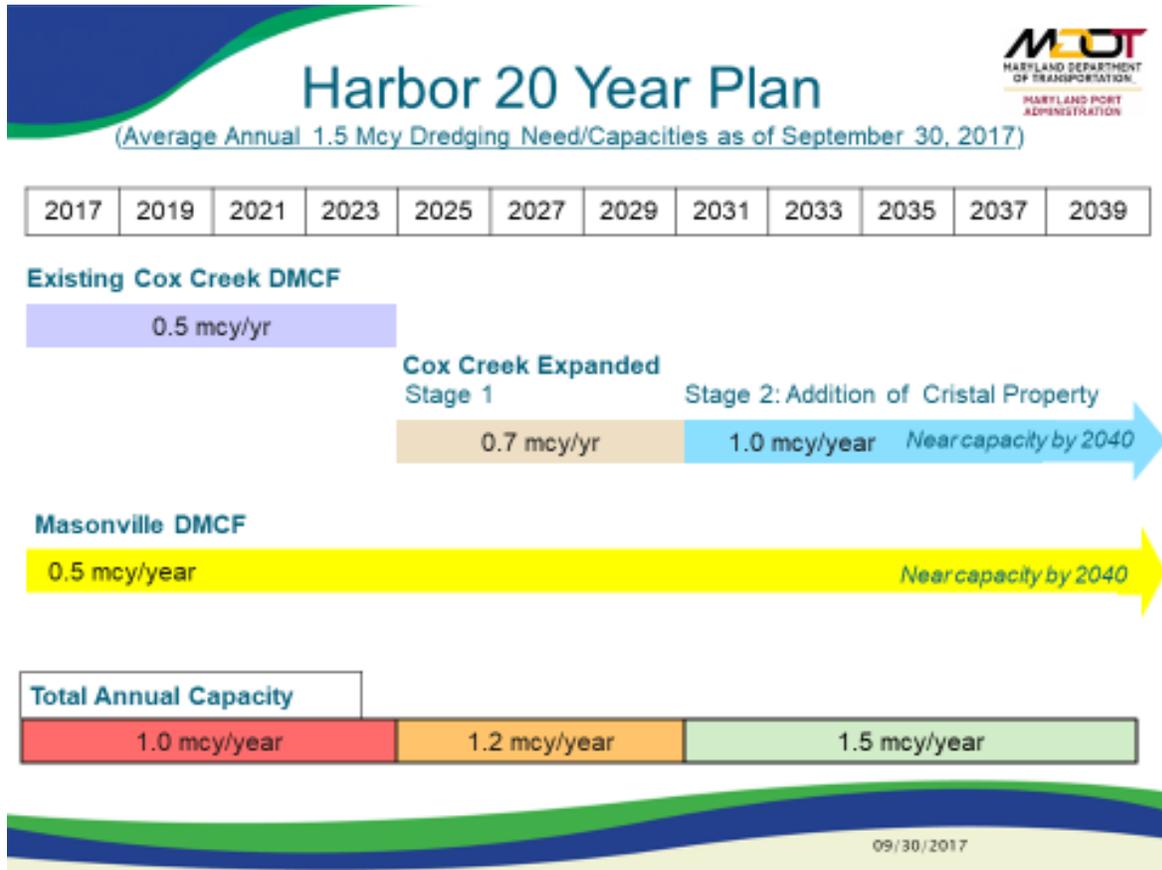
U.S. Army Corps of Engineers, Baltimore
Kevin Brennan
Justin Callahan (alternate)

U.S. Army Corps of Engineers, Philadelphia
Anthony DePasquale
Gavin Kaiser (alternate)

U.S. Fish & Wildlife Service
Genevieve LaRouche
Chris Guy (alternate)

University of Maryland Center for Environmental Science
Donald Boesch
(DMMP Management Committee Liaison)
David Nemazie (alternate)

APPENDIX 4: CURRENT 20-YEAR DREDGED MATERIAL PLACEMENT PLAN



Bay & C&D Approach 20 Year Plan

(Annual 3.2 Mcy Dredging Need)

2.0 Mcy Bay Channels, 1.2 Mcy C&D; Capacities as of September 30, 2017

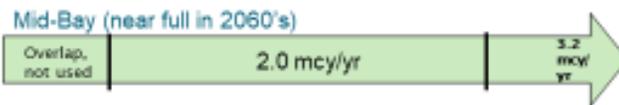
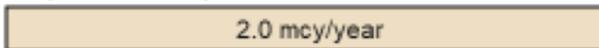


2017	2019	2021	2023	2025	2027	2029	2031	2033	2035	2037	2039
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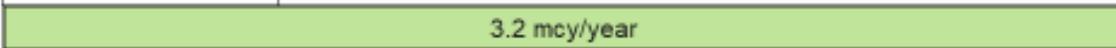
Pearce Creek



Poplar Island & Expansion



Total Annual Capacity



**APPENDIX 5: HARBOR TEAM RECOMMENDATIONS FOR FURTHER STUDY
COKE POINT BACKUP OPTIONS
Report to the Management Committee
and
Executive Committee of Maryland's
Dredged Material Management Program
September 15, 2011
EXECUTIVE SUMMARY**

The Harbor Team considered 23 potential options for backup to Coke Point over a period of one year.

The Harbor Team agreed to the following recommendations:

Strengthening the standards that apply to all dredged material management and community enhancement options;

Convening a committee to investigate and recommend innovative methods of funding community enhancement projects;

Pursuing a placement site with community enhancements at Coke Point as vigorously as possible – with Coke Point remaining the Harbor Team's highest priority;

Conducting a feasibility study to assess innovative reuses already under consideration with a goal of innovatively reusing at least 500,000 cubic yards of dredged material per year by 2023 and answering questions necessary to determine if innovative reuse can become a viable part of the State's Dredged Material Management Program;

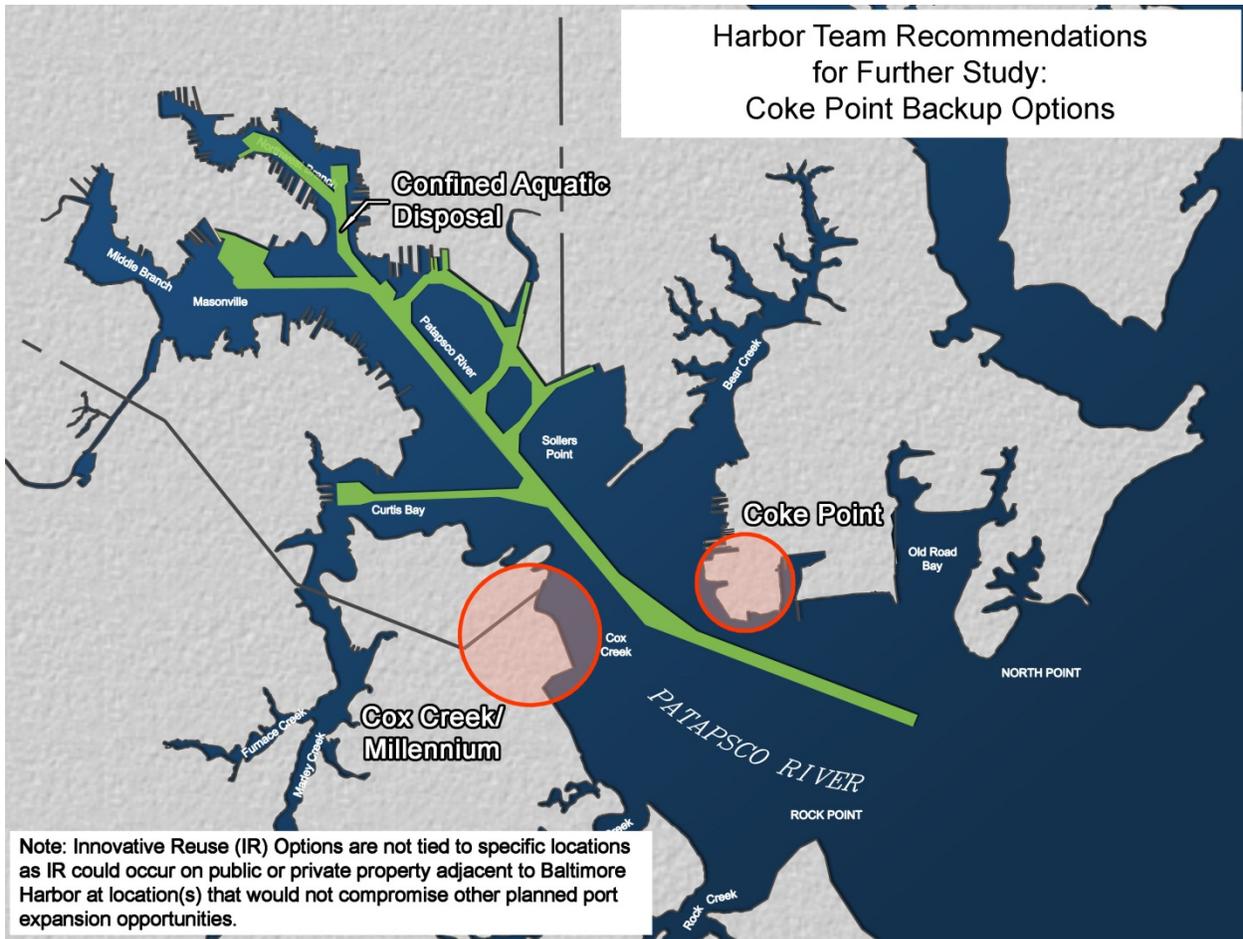
Coordinating a plan to conduct a pilot test of Confined Aquatic Disposal (CAD) to determine if MPA could obtain the necessary permits to conduct a pilot test; conducting a pilot test if permits are issued; and, if pilot tests results are favorable, conducting a feasibility study of the use of CAD for harbor materials;

Ranking the Combined Cox Creek Millennium option as the highest priority of the land-based backup options to Coke Point for further study with two provisos:

1. Conducting community outreach to determine whether or not raising the dikes on the existing Cox Creek Dredged Material Containment Facility would be acceptable; if not, this feature would be dropped from further consideration.

2. Holding public information meetings in Anne Arundel County and Baltimore City as close to the zip code of the option as possible.

Harbor Team Recommendations
for Further Study:
Coke Point Backup Options



Note: Innovative Reuse (IR) Options are not tied to specific locations as IR could occur on public or private property adjacent to Baltimore Harbor at location(s) that would not compromise other planned port expansion opportunities.