



Maryland
Green Registry
MEMBER

The Maryland Green Registry promotes and recognizes sustainable practices at organizations of all types and sizes. Members agree to share at least five environmental practices and one measurable result while striving to continually improve their environmental performance.

Maryland Port Administration



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State Government
Member since June 2011

Management and Leadership

Environmental Policy Statement

The Maryland Port Administration (MPA) has an Environmental Strategy to enact and expand on high standards of environmental stewardship throughout its operations, which contains the following MPA's Environmental Policy:

"Stewardship and sustainability of the environment and protection of human health are essential elements of the MPA mission. MPA is committed to:

- *Environmental compliance and improvement.*
- *Reduction of its energy consumption.*
- *Continual improvement of environmental and energy performance.*
- *Pollution prevention.*
- *Effective engagement with employees, communities, port users, and cargo owners.*

Environmental Team

MPA's environmental team has the mission of continued management of a fully implemented Environmental Management System (EMS) based on the ISO Standard 14001 certification. The Team reviews its land-based and water-based actions and identifies potential initiatives for reducing adverse impacts to the environment and for minimizing greenhouse gas emissions. MPA was recertified in 2017, 2020, and 2023. The certification, awarded by NSF International, is recognized internationally.

In addition, MPA's Dredged Material Management Program (DMMP) has greatly enhanced stakeholder involvement to ensure that the greatest social, environmental, and operational impacts are delivered and sustained over time. To support this effort, the DMMP leverages a series of stakeholder advisory committees that assist in the implementation of the DMMP. The committees listed below anchor that engagement and advise on virtually all elements of what, where, when, and how we do what we do:

- *DMMP Executive Committee*
- *DMMP Management Committee*
- *DMMP Citizens Advisory Committee*
- *DMMP Cox Creek Citizens Oversight Committee*
- *DMMP Harbor Team*
- *DMMP Hart-Miller Island Citizens Oversight Committee*
- *DMMP Innovative Reuse Committee*
- *DMMP Masonville Citizens Advisory Committee*
- *Pearce Creek Implementation Committee*



Annual Environmental Goals

MPA's annual environmental goals include:

- *Continuing to reduce air emissions at the Port of Baltimore.*
- *Improving recycling and sustainability goals.*
- *Actively working with State and local partners to meet standards for water quality in the Chesapeake Bay, known as Total Maximum Daily Loads (TMDLs).*
- *Going beyond compliance with stormwater requirements by implementing runoff pollution control measures in advance of regulatory deadlines and developing new and innovative nutrient and sediment reduction technologies where practical.*
- *Reducing energy consumption and greenhouse gas emissions.*

MPA has been improving water and air quality, resolving flooding problems, engaging the community, and extending its conservation efforts well beyond the Port's property line.

Moreover, the Safety, Environment and Risk Management (SERM) office of MPA has developed a Sustainability Strategy for 2020- 2023. The strategy sets short-term goals and focuses on:

- 1- *Safety & risk management: Provide a safe workplace and protect MPA's Physical assets.*
- 2- *Air and energy management: Identify and implement technologies and practices that reduce greenhouse gas and diesel emissions to "near zero".*

- 3- Water quality management: Implement cost-effective technologies and practices that protect and improve water quality; and
- 4- Stakeholder engagement: Strengthen MPA's relationships with stakeholders.

Environmentally Preferable Products and Services

See below.

Environmentally Preferable Purchasing

MPA utilizes service contracts for recycled and environmentally preferable products available through the Department of General Services (DGS) for office supplies. MPA recognizes the potential impacts of diesel engines associated with Port activities and is working to reduce diesel emissions.

The Port's Diesel Equipment Upgrade Program <http://www.dieselupgrades.org/> has replaced, repowered, or retrofitted a variety of cargo-handling equipment, locomotive engines, and marine engines. Since the initiation of the program in 2008, MPA has obtained over \$20 million in grant funds, which have been used to upgrade equipment and vehicles. A sub-program of this initiative, known as Dollars for Drays, provides up to \$30,000 to replace older, diesel-powered drayage trucks with newer, less polluting trucks. To date, this program has provided \$6.6 million in rebates, leading to the replacement of 288 older drayage trucks.

MPA focused on novel technologies for a more sustainable Port of Baltimore to continue to decrease its greenhouse gas (GHG) emissions. In 2022, Ports America Chesapeake's (PAC) Seagirt Marine Terminal purchased fifteen (15) hybrid electric rubber-tired gantry cranes, which will be operational in 2023. Also, the Port started utilizing four additional Neo-Panamax container cranes to serve the new second deep-water berth. The supersized, fully electric cranes avoid the equivalent of 985 metric tons of CO₂ per year, which is comparable to 96,758 gallons of diesel consumed or over 1 million pounds of coal burned.

These programs have also been instrumental in replacing 118 diesel-powered yard trucks, forklifts, and cargo handling equipment (CHE) with less polluting machinery, including new zero-emission, battery-powered units. Therefore, the Port's equipment upgrade initiatives have proven fruitful and efficient, resulting in a reduction of air pollution emissions by over 6,100 metric tons of CO₂ per year.



Environmental Restoration or Community Environmental Projects

When developing new dredged material placement facilities, MPA mitigates its environmental impact in ways that benefit nearby communities as well as the Chesapeake Bay ecosystem. Examples include:

Masonville Dredged Material Containment Facility:

In 2013, Masonville Cove was designated as the nation's first Urban Wildlife Refuge Partnership by the U.S. Fish and Wildlife Service, connecting city dwellers to nature. MDOT MPA restored public access to a portion of the Patapsco River and constructed the Masonville Cove Environmental Education Center. Masonville Cove is also a place where the community comes together for cleanups and other activities. The Living Classrooms Foundation and the National Aquarium provide educational and environmental programs at the center that have been attended by about 2,000 students annually.

On April 27, 2022, a major step in protecting Masonville Cove was achieved with the approval of the Masonville Cove Conservation Easement. The MPA entered this easement with the Maryland Environmental Trust and the Baltimore Green Space. The Easement is intended to prevent Masonville Cove from being used for any purposes except for environmental education, preservation of open space, and the protection of natural habitat.

In September 2022, MPA hosted its 9th BioBlitz at Masonville Cove. A total of 137 species were found by 88 participants during 279 recorded observations, including an eastern worm snake recorded for the first time, and an adult, female red-eared slider. This non-native, central US species is well established throughout Maryland and is now considered naturalized. Also, hundreds of wild indigo plants were grown for the benefit of frosted elfin—small, brown butterflies that are considered critically imperiled in Maryland. Despite school building closures and setbacks caused by the pandemic, the partnership program that gives terrapins a “head start” in classrooms before their release on Poplar Island was able to release eight terrapins. More than 100 classes participated in virtual programming.

Innovative and Beneficial Reuse of Dredged Material:

MPA's DMMP looks for beneficial and innovative ways to reuse the dredged material including wetland restoration and island recreation. MPA is the largest creator of wetlands. A new Innovative Reuse & Beneficial Use Strategy was developed to guide the use of dredged material, with a focus on climate resiliency. The DMMP continues to

provide innovative solutions while delivering on the mission to maintain the Port's 50-foot-deep channel system. Capitalizing on the substantial investments made over the past several years, numerous multi-year planning efforts have shown substantial progress in 2022.

Regarding improvements to Dredged Material Containment Facilities (DMCF) that happened in 2022, the base dike widening began at the Masonville DMCF. Eventually, MPA plans to raise the dike to +42'. Also, construction of the waterside dike to elevation +44' was completed as part of the expansion of the Cox Creek DMCF.

The use of dredged material in the creation of habitat is especially beneficial for birds, as well as other wildlife. For instance, in 2022, Maryland birders have been spotting the slaty-backed gull, a foreign visitor native to Northern Pacific regions, nearby at the Quarantine Road Landfill and at the Curtis Creek Drawbridge. Bird lovers also had the opportunity to watch tree swallows, common at all MPA's dredged material sites, but most numerous at Poplar and Assateague Islands. A colony of estimated 40-50 pairs of common terns, a state endangered breeding species, nested on the offshore barge at Masonville Cove for the past several years and represents the only known nesting colony in Maryland north of the Chesapeake Bay Bridge. A Barn Owl's nest was also found, celebrated, and observed at Poplar Island, as the species has a declining population.

Two Maryland islands have been restored to their approximate "historical" size before erosion using dredged material: Poplar Island and Hart-Miller Island.

Poplar Island Ecosystem Restoration:

As 2021 marked the 20th anniversary of Maryland's Dredged Material Management Act (DMMA), the Port and its partners celebrated the expansion of Poplar Island. Eroded to just 10 acres, the island was restored using dredged material to its original 1,150-acre footprint. An expansion completed in 2021 provides 575 additional acres, including four new wetland cells and one large upland cell.

As part of the MPA sponsored Terrapin Education and Research Partnership (TERP), 127 diamondback terrapin hatchlings collected from Poplar Island were delivered to classrooms for the students to raise over the 2021/2022 school year, which gave the terrapins a good "head-start." In late spring, the students traveled to Poplar Island for a tour and to release their terrapins.

Hart- Miller Island:

The 1,100-acre island was built using dredged sediment from shipping channels that serve the Port of Baltimore and has become a major stop for migratory shorebirds. The National Audubon Society lists Hart-Miller Island among its important bird areas. A system of trails was completed to enable hikers and cyclists to explore the south cell of Hart-Miller Island, which was restored using dredged material.

An Audubon Christmas Bird Count conducted by the Baltimore Bird Club at Hart-Miller Island counted over 13,000 birds of 53 different species, many varieties of waterfowl, including a family of rare trumpeter swans. The Audubon count provides valuable community science data for bird population research.

Cox Creek DMCF:

The Cox Creek DMCF expansion project began in August 2021, and the project is scheduled to be completed by May 2024. Construction of the Cox Creek DMCF waterside dike to elevation +44' was completed as part of the expansion. Increasing capacity at the Cox Creek facility is critical for the long-term plan for placement capacity of Harbor material and maintaining the 50-foot-deep channel necessary for the competitive movement of cargo at the Port of Baltimore.

Environmental restoration at Swan Creek, adjacent to the Cox Creek DMCF, revived wetland habitat and now draws birdwatchers to an area where rare species have been seen. The 126- acre Swan Creek wetlands area will be preserved in perpetuity by the recent expansion of the Scenic Rivers Land Trust by the acquisition of five easements, totaling 224 acres, from North County Land Trust.

Mid-Chesapeake Bay Island Ecosystem Restoration Project:

The USACE Baltimore District and MDOT signed a Project Partnership Agreement for the \$4 billion Mid-Chesapeake Bay Ecosystem Restoration Project (Mid-Bay Project), for the restoration of James Island and Barren Island, beneficially re-using material dredged from the Port of Baltimore. The USACE also awarded the first contract for construction at Barren Island as part of the Mid-Bay Project. Barren Island Phase 1 began in 2023 and includes the construction of a majority of the sills and breakwaters around the island.

The Mid-Bay Island Project will replace Poplar Island as the main recipient of dredged material from the Chesapeake Bay federal shipping channels. Once complete, the Mid-Bay Project will be comprised of approximately 55% wetland and 45% upland habitats and provide 90-95 million cubic yards for dredged material capacity over the

next 30 years.

Independently-Audited Environmental Management System

MPA uses an Environmental Management System (EMS) to blend environmental stewardship into the daily tasks and long-term planning of Port operations. In 2011, MPA achieved recognition for its EMS by receiving ISO 14001-2004 certification, which signals that the MPA has met globally recognized standards for environmental management. MPA was recertified in 2017, 2020, and again in 2023.

Waste

Waste Reduction and Reuse

MPA and its partners have established many ways to give used materials a second life, keeping them out of landfills while benefiting the community. From dunnage, cargo packing material from ocean-going vessels, to wharf logs, placed on the edge of vessel berths to serve as curb stops that wear out over time, a variety of materials are used to support port operations.

Seven (7) Research and Development Innovative Reuse (IR) projects are underway to allow MPA to identify high-volume, sustainable reuse applications to support long-term strategic planning and identify the critical steps to making large-scale IR a reality.

For instance, the Greater Baybrook Alliance (GBA) had been searching for material to serve as bollards to prevent illegal dumping at Farring Baybrook Park in Curtis Bay. After receiving the necessary approvals, MPA oversaw the donation of worn-out wharf logs to the BPA for future use by community associations. South Baltimore Community Land Trust youth leaders teamed up with the BPA to find creative ways to reuse wood dunnage. The dunnage found new life in projects such as benches, neighborhood art, and in a recycling, station built by students from Benjamin Franklin High School at Masonville Cove.

River Trash Interceptors (Trash Wheels):

Mr. Trash Wheel, Professor Trash Wheel, and Gwynnda the Good Wheel of the West have been all partially funded by MPA to help prevent trash from entering the Baltimore Harbor and Patapsco River leading to the Chesapeake Bay. Located at the mouth of Gwynns Falls, Gwynnda the Good Wheel of the West was launched in June

2021, with the support from MPA.

Captain Trash Wheel, a 40-foot long, trash gobbling machine, was originally installed on June 5, 2018, at the mouth of a small stream in Masonville Cove to intercept floating trash. Its operation and maintenance are funded by the MPA. In 2022, MPA began a renewed effort to promote Captain Trash Wheel on social media <https://www.facebook.com/CaptainTrashWheel>

According to the Waterfront Partnership of Baltimore, as of April 2023, the "Trash Wheel family" has collected over 2,362.23 tons of trash (938,626 plastic bags, 13,036,008 cigarette butts, 1,812,576 plastic bottles, 1,383,053 foam containers, 7,076 sports balls, among other items) that would otherwise end up in the Chesapeake Bay or in the ocean.

Trash Wheels have also played an important role as environmental educational and awareness tools, particularly in social media platforms. As of 2023, Captain Trash Wheel has over 5,005 social media followers across its three social media accounts, and the new member of the Trash Wheel family - Gwynnda The Good Wheel of the West - has over 172 followers. Mr. Trash Wheel, the "older brother" installed in 2014, has over 73, 000 followers in three social media platforms.

Recycling

MPA is committed to 100% recycling of oil and fluids, fuel filters, wire rope from cranes, scrap metal, tires, batteries, fluorescent tubes, ballasts, paper, cardboard, bottles and cans at all MPA facilities. Asphalt and concrete are recycled. A universal waste collection and disposal system was installed.

In 2022 MPA recycled 8,716 tons of waste including cardboard, bottles and cans, antifreeze, asphalt, computers, concrete, glass, fluorescent light tubes, batteries, scrap metal, motor oil, tires, railroad ties, office paper, etc. from Dundalk Marine Terminal and the World Trade Center.

Energy

Energy Efficiency

The Masonville Cove Environmental Education Center is a net-zero energy-efficient building including geothermal heating, solar panels, solar hot water heater, efficient building envelope, double insulated windows, occupancy sensor-controlled

lighting, CFL bulbs, moon tube lighting, recycled and local materials, and minimal water-use restrooms.

In 2015 MPA entered into an Air Quality Voluntary Agreement with MDE and MDOT. In 2021, the Maryland Energy Administration (MEA) joined these agencies and became a signatory. The Agreement covers the voluntary implementation of air quality & energy efficiency projects. The agencies have been meeting monthly to collaborate on project implementation and stakeholder engagement with an emphasis on underserved/environmental justice communities. MPA completed eight (8) successful years working with MDE, MDOT and MEA in implementing air quality improvement projects under the Voluntary Air Agreement. MPA has been a leader in helping secure \$20 million in U.S. EPA grants since 2008 to implement these projects. Since 2008, nearly 5,600 tons of priority air pollutants have been reduced.

In addition to continuing to research activities, technologies, and equipment that might potentially reduce harmful air emissions and/or conserve energy, the Workgroup prioritized opportunities that could result in improved air quality for communities near Port operations. Using air emissions inventories developed by MPA, the Workgroup continued to identify the technologies and activities to best address Port-related sources of air emissions in 2021, such as:

Automatic idle reduction technology for locomotives and port equipment.

Cargo handling equipment (forklifts, yard tractors, top loaders, and cranes) replacement and engine repowers.

Dray truck replacement – providing partial purchase price to replace older polluting trucks.

Harbor tugs – identifying older tugs that could receive new cleaner engines.

Alternative vehicle and infrastructure energy sources such as battery electric, hydrogen, fuel cell, and solar.

In 2022, the Workgroup renewed its efforts to partner with communities on projects, support tours of POB terminals, participate in virtual and in-person meetings, and otherwise engage environmental justice stakeholders in information-sharing activities that promote transparency, communication and understanding.

The expansion of Baltimore's Howard Street tunnel will provide seamless double-stack capacity from Maine to Florida while sponsoring reductions in greenhouse gas emissions in the region. Once completed, the tunnel expansion will allow for the

transit of double-stacked container rail cars out of the Port, which will reduce fuel consumption by about 137 million gallons and alleviate congestion along the I-95 corridor.

The ongoing work to implement a modern, efficient fleet for the Port will continue to drive economic, environmental, and community benefits. The Neo-Panamax container cranes installed at the Seagirt Marine Terminal cranes are fully electric without any diesel emissions and are part of a significant expansion providing greater capacity and efficiency to handle anticipated increases in container volumes. The four new electric cranes avoid the equivalent of 985 metric tons of carbon dioxide (CO₂) emissions avoided per year, and the 15 new hybrid rubber tired gantry cranes avoid approximately 78 metric tons of CO₂ equivalent per year.

Renewable Energy

MPA has initiated many activities to reduce its use of energy at the World Trade Center and its facilities at Port terminals. Solar panels have been installed on the rooftops of the Port of Baltimore Cruise Terminal and Shed 10 of the South Locust Point Marine Terminal. The 750-kilowatt photovoltaic system is expected to produce 379,518 kilowatt hours a year – energy that is worth \$37,952 which will reduce demand by 2,024 kilowatts. Additionally, several MPA facilities have upgraded their lighting to LED. MPA's electrical maintenance department installed new LED lighting inside four sheds at the Dundalk Marine Terminal. The LED upgrades reduce electricity usage, increase worker safety, and help to lower GHG emissions.

Masonville Cove Environmental Education Center has a solar hot water panel, two large photovoltaic panels for generating electricity, a geothermal heating system, and recycled materials were utilized in construction of the facility.

MPA received a grant from the MEA's Resilient Maryland Program to develop a feasibility study that investigated microgrid options, looking at wind, solar, batteries, and fuel cells at the Dundalk Marine Terminal. Also, MPA received a grant of \$10 million in federal funds to help protect the Dundalk Marine Terminal against severe weather, sea level rise, and other potential climate change impacts. The funds from the U.S. DOT's BUILD transportation grant program, will help advance MPA's \$36.7 million Resiliency and Flood Mitigation Improvements project at the Dundalk Marine Terminal.

Transportation

Efficient Business Travel

MPA utilizes teleconferencing in lieu of business travel whenever practical.

Fleet Vehicles

All MPA-owned diesel-powered vehicles and equipment use ultra-low sulfur-bio diesel fuel, including the diesel-powered cranes and rubber tire gantry cranes. Flex-fuel vehicles, alternative fuel vehicles, hybrid vehicles, and ZEVs have been introduced into the MPA fleet.

In collaboration with RoadOne and IKEA, the Port launched a one-month test of a Nikola Motor battery electric-powered dray truck to transport containers between the Port and the IKEA distribution facility in Perryville, MD. With support from the aforementioned DERA award, RoadOne will be purchasing two new Zero Emission dray trucks in 2023 for dedicated haulage of containerized cargo shipments on behalf of IKEA. Keen Transportation, a subsidiary of Wallenius Wilhelmsen, is purchasing the other Zero Emission dray truck which is also expected to be delivered in 2023.

See additional information about MPA efforts to reduce emissions from dray trucks and other equipment and the installation of EV charging stations under the Energy Efficiency heading.

Water

Water Conservation

MPA redesigned its fire pumps to recirculate fire pump test water resulting in a savings of approximately 14 million gallons of water and improving the water quality of the Harbor by eliminating the discharge of chlorinated water.

Stormwater Management and Site Design

MPA is committed to meeting the new federal pollution limits for the Chesapeake Bay, known as TMDLs, and has developed a Water Quality Master Plan that characterizes MPA facilities, identifies areas for improvement, and recommends strategies for supporting TMDLs through its Environmental Management System.

MPA continues to work in collaboration with MDE to go beyond simple compliance with TMDL and stormwater requirements by implementing stormwater pollution control practices in advance of regulatory deadlines; developing new and innovative nutrient and sediment reduction technologies; evaluating and quantifying the water quality benefits associated with air emissions reductions at Port facilities; and registering those practices with MDE to assist in development of the State's nutrient credit trading program and meeting the State's TMDL requirements.

MPA is working collaboratively with MDE to evaluate air quality improvements resulting from these efforts and develop methods for quantifying nutrient credits that can be applied to the TMDL. This can provide an additional financial incentive for both public and private sector facilities to conserve energy and control emissions while improving water quality at the same time.

MPA is monitoring and working to reduce the release of nutrients and sediments in outflow from dredged material placement sites, MPA terminals, and other facilities. MPA monitors water around the Hart-Miller Island, Masonville, and Cox Creek placement sites and has found no adverse impacts from discharges.

All MPA's tenants that hold a General Discharge Permit for Industrial Activities are required to have stormwater management plans in place for their operations.

A stormwater vault at the Seagirt Marine Terminal, installed by Ports America Chesapeake, collects and treats stormwater before releasing it to the harbor.

A Perk Filter was installed in a storm drain inlet at the Dundalk Marine Terminal as a stormwater retrofit. The filter is designed to treat impervious surfaces removing a variety of contaminants from stormwater and prevent them from eventually reaching downstream waterways. The Perk Filter removes 80 percent of total suspended solids and 40 percent of total phosphorus. This innovative technology also retains oil, metals, and trash from discharged stormwater.

At the Dundalk Marine Terminal, an algal turf scrubber was installed as a demonstration project to test how well controlled algae growth can remove potentially harmful nutrients from the water column. The 300-foot-long scrubber pumps water from the Patapsco River into a shallow screened trough. The water flows through the trough, where the growth of natural algae takes up nutrients from the water and releases dissolved oxygen. This improves water quality by reducing nutrients and increasing the amount of dissolved oxygen available to fish and other aquatic creatures. The pilot project successfully demonstrated the ability to improve water quality, convert waste algae into biogas, and produce electricity using a fuel cell.

MPA has installed a new state-of-the-art stormwater treatment system as part of the redevelopment of the Fairfield Marine Terminal. The underground system, known as the Jellyfish®, treats stormwater for pollutants such as nitrogen, phosphorus, sediment, trash, and metals before the water is discharged into the Patapsco River. The unit can treat stormwater runoff from a three-acre area.

A stormwater management system was completed in 2020 at the Fairfield Marine Terminal. A large underground sand filter will absorb and treat the runoff from nearly 14 acres of the terminal. The project used material dredged during the widening of the Seagirt Marine Terminal's navigation channels to fill an antiquated wet basin to allow for construction of the new terminal. The sand filters help to complete the project, treat runoff from the surrounding area, and ensure that only clean stormwater enters Baltimore Harbor.

MPA developed unproductive land that was previously used to handle imports of fruit to create additional space to accommodate the growing volume of automobiles that move through the Port of Baltimore. The work included the installation of three surface sand filters that created 1.55 acres of new impervious surface, but the project incorporated 7.05 acres of stormwater treatment for a net impervious surface restoration of 5.5 acres.

Upgrading the Dundalk Marine Terminal's drainage system to prevent damaging flooding has proven to be beneficial. Prolonged rainstorms that flooded the terminal lots led the Port to update its 1929 drainage system. MPA installed storage vaults that hold 56,200 and 101,834 cubic feet total capacities of runoff, provides water quality treatment through a sand filter and pumps the filtered water into Colgate Creek.

MPA has provided funding to the Department of Natural Resources to help restore oyster beds in the Chesapeake Bay. This initiative allows oysters to filter pollutants from the river and create food and habitat for other species.

Currently, the City of Baltimore is home to more than 1,500 new trees through MPA's Urban Forestry Partnership with the nonprofit group Blue Water Baltimore. Increasing Baltimore's tree canopy helps offset sources of carbon dioxide, reduces stormwater runoff, creates wildlife habitat, saves energy, improves property values, and deepens the connection to nature for city residents.

In 2022, MPA and the U.S. Army Corps of Engineers signed a Project Partnership Agreement (PPA) for the \$4 billion Mid-Chesapeake Bay ecosystem restoration project to rebuild the James and Barren islands using dredged materials. MPA also convened the Mid Bay Resiliency Working Group, a collaborative effort across state and federal

resource agencies and stakeholders to maximize the coastal resiliency benefits of the project. The Barren Island restoration will create 72 acres of wetlands habitat, protect and preserve sub-aquatic vegetation, and improve water quality.

MPA looks to create wetlands and/or wildlife habitat through its Dredged Material Management Program (DMMP). Wetland systems help improve water quality through sediment fixation, in addition to being barriers to storm surge having a high capacity for energy absorption/attenuation.

MPA was awarded an American Association of Port Authorities Award of Excellence for Environmental Mitigation for a demonstration project that removes excess nutrient pollution and increases oxygen content in the Baltimore Harbor.

MPA received a grant of \$10 million in federal funds to help protect the Dundalk Marine Terminal against severe weather, sea-level rise, and other potential climate change impacts. The funds from the U.S. Department of Transportation's (U.S. DOT) Better Utilizing Investments to Leverage Development (BUILD) transportation grant program, will help advance MPA's \$36.7 million Resiliency and Flood Mitigation Improvement project at the Marine Terminal. The project will install sea curbs to prevent the terminal from flooding during storm surges, install backlog preventers on 15 existing storm drains and outfalls to prevent storm surges from flooding lower-level areas of the terminals, and install a new 10' by 5' concrete box culvert to increase the capacity of the existing collection system to handle extreme rainfall events.

The Safety, Environment and Risk Management (SERM) office of MPA prides itself on following all regulatory requirements relating to water quality and goes beyond compliance whenever feasible. Innovative new technologies spearheaded by SERM include the algal flow-way on the Dundalk Marine Terminal that grows algae to remove nutrients and sediment from the Patapsco River and a lightweight green roof that reduces stormwater runoff from an MPA building that could not support a traditional green roof.

SERM has a goal to implement Cost-Effective Technologies and Practices that Protect and Improve Water Quality, and it has restored over 2,500 feet of eroded streambanks and shorelines at the Baltimore Zoo and Arlington Echo Education Center.

Smart Cans:

MPA purchased and installed six Big Belly solar powered trash receptacles that look like mailboxes. The waste receptacles have a solar panel on top that supplies the power used to compact the trash.

To help stop litter in Baltimore City and the surrounding waterways, MPA funded more than 200 Smart Cans. Baltimore's central business district and other high-profile business and commuter corridors received another 197 cans funded by MPA.

Street Sweeping:

MPA and its tenants conduct regular street sweepings which remove trash and sediment and installed trash collectors in several storm drains as part of its Clean Port Initiative to reduce waterborne litter. In 2022, MPA collected and disposed of 41 tons of street sweepings and an additional 63 tons from stormdrain cleaning. MPA annually inspects 25% of all stormdrain structures to determine if cleaning is needed. Stormdrain cleaning removes sediment and nutrients from the stormwater system before it can reach the Patapsco River.

Anti-Litter Campaign:

In 2022 MDOT, including MPA, launched an anti-litter campaign to educate Marylanders on the price we all pay for litter, and to urge everyone to put litter and recycling materials in their proper place, using the slogan, "Be Superhero — Put Litter in Its Place!". During the past eight years, MDOT has spent \$60 million – averaging more than \$7 million annually – to clean up 14 million pounds of litter along our state roadways. MDOT intends to raise the public's awareness that the money could have been spent to improve pedestrian and bicyclist facilities, augment transit connections or undertake other critical transportation projects to make our roadways safer and more accessible for all users.

Environmental Certification Programs, Awards, and Other Activities

Climate Change:

MPA will continue to consider and assess the impacts and opportunities to the Dredged Material Management Program resulting from climate change. With more than 3,100 miles of tidal shoreline and approximately 70 percent of residents living within the coastal zone, Maryland is susceptible to sea-level rise and storm surge, which threatens property, lives, and the economy. MPA actively participates on the Maryland Commission on Climate Change's Adaptation and Resiliency Work Group. Since 2016, MPA has collaborated with the Environmental Defense Fund (EDF) and has hired EDF Climate Fellows to evaluate and recommend climate change programs and projects.

In 2023, as the Innovative & Beneficial Use Strategy is re-evaluated, opportunities to address climate change in the strategy will continue to be considered. MPA will also focus on the carbon sequestration opportunities associated with beneficial use.

To fulfill its mission, MPA must operate along the water's edge, making it susceptible to the impacts of climate change. Marine terminals and other facilities, due to their location, may be subject to flooding and tidal inundation from projected sea level rise and severe weather events. Since marine activities require direct access to water as an integral part of their function, marine terminals cannot be relocated and must adapt in place. As a water-dependent use, MPA is continuously working to make sure its engineering, facility and operations personnel, as well as those of our private-sector partners, are aware of potential climate change impacts, and are working to become more resilient.

MPA has been awarded a \$150,000 Federal Emergency Management Administration (FEMA) grant under its Building Resilient Infrastructure and Communities Program to develop a comprehensive flood and storm vulnerability assessment and improve overall coastal resiliency at its marine terminals. The study will also encompass the communities adjacent to Port terminals.

Recognizing that port operations may be threatened by changing climate conditions, MPA has adopted a four-pronged model to assess future actions, as follows:

MIGRATE: Move terminal functions out of the flood plain, when feasible. Many terminal functions must be in proximity to the water, making this difficult to execute. MPA may, however, move activities out of the flood plain if they are not directly related to cargo operations, including administrative activities.

ELEVATE: All new MPA facilities or structures sensitive to damage that must remain on the terminals will be designed to be 2 feet above the 100-year flood elevation if operationally feasible.

MITIGATE: Those facilities or structures that cannot be migrated or elevated, will be reinforced or strengthened with non-corrosive materials that can handle inundation or limit potential weather damage, whenever significant maintenance is required, or capital investments are being made.

OPERATE: In the face of climate-related events (and other disruptive events/disasters), the Port has operational plans in place so that normal operations can resume as quickly as possible.

Components of the Port's flood mitigation project include deployment of berth and landside sea curbs, installation of storm drain backflow preventers, and construction of a box culvert/water storage structure to prevent flooding caused by storm surge and microburst storms.

Stakeholder Engagement and Support:

MPA continues to prioritize increasing stakeholder engagement, especially focusing its efforts on underserved communities. COVID-related restrictions hindered direct or in-person engagement, but virtual meetings were used routinely. After the pandemic restrictions were lifted, we engaged in the promotion significant stakeholder engagement activities, such as:

Port tours - The Baltimore Port Alliance (BPA) provides Port tours with interested stakeholders including representatives from the Baltimore Compost Collective, Turner Station Conservation Teams, MDE, Chesapeake Bay Foundation, New Broadway East, Baltimore City Environmental Control Board, Friends of Garrett Park, Abell Foundation, Blue Water Baltimore, Locust Point Civic Association, City of Refuge Baltimore, Grow Home, Inc., Baltimore Metropolitan Council, Councilman Stokes and Councilman Glover. The BPA hosts two tours each year.

Seeking new partners--Environmental Defense Fund met with MPA environmental leadership and MDE to discuss collaboration, including potential funding opportunities. EDF is very interested in pursuing hydrogen technologies and is supportive in seeking grant opportunities, having consistently supported previous DERA proposals.

Attending community group meetings to provide presentations on air quality and the agencies' efforts to reduce air emissions, as well as learn of community concerns and focus areas.

Enhancing relationships with underserved communities and strengthening Environmental Justice policies.

Developing closer relationships with representatives of faith-based and other organizations in West Baltimore, Brooklyn, Dundalk and additional areas near the Port.

Including private Port tenants in the workgroup's meetings to exchange information and ideas. CSX briefed the workgroup on their climate change strategy which includes using electric switcher locomotives.

Meeting with BGE and learned about their Path to Clean strategy which

includes an analysis of decarbonization options within its service territory. Their analysis found that paths to decarbonization relying on an integrated energy system are easier and cost less, and include increasing funding for energy efficiency programs, incentives to support decarbonization for new construction and retrofits, supporting development of electric vehicle charging infrastructure, promoting building electrification measures including all-electric new construction and hybrid electrification for existing buildings.

The May 2022 meeting of the Cox Creek Citizens Oversight Committee (CC COC) included a site visit to the Cox Creek DMCF, where attendees toured the DMCF complex and the Cox Creek expansion project, which raised the dikes from an elevation of 36 feet to 60 feet. The CC COC oversees the implementation of the DMCF project and provides advice to MPA on the expansion and operation of the facility and the potential impacts on nearby communities. The Cox Creek DMCF also hosted an Open House in October 2022, where 120 attendees were free to visit 15 informational and interactive stations from partner organizations. The interactive stations included fish, terrapins, van tours of the expanding Cox Creek DMCF site, and both guided and self-guided birding.

The Turner Station Conservation Team, MPA and Chesapeake Bay Foundation hosted an open house for the Fleming Park Restoration Project at the Fleming Senior Center in the historic neighborhood of Turner Station. The event provided an update on the preliminary design of dredged material reuse for wetland creation and shoreline restoration planned to enhance the park's resiliency and ecologic benefits, as well as improve public access.

On February 25, 2023, the WildStem Career Summit took place, with MPA support. Students from Coppin State University and Morgan State University were exposed to opportunities and careers in the STEM, sustainability, and maritime industries. Hosted at Brown Advisory, organized by Harbor City Links and Masonville Cove Partnerships, in collaboration with the National Wildlife Federation, the event was also a great opportunity to recruit potential members of the Black women's group to one of the Dredge Material Management Program (DMMP) committees. WildStem was tailored to further the MPA DMMP Annual Report 2022 recommendations on Environmental Justice.

Public Outreach:

MPA's continues to increasingly engage local communities, both virtually as well as in-person environmental education and awareness events.

Virtual educational resources from the Port of Baltimore are available on an

Environmental Education E-Learning Portal. EcoPort Newsletter is a bi-monthly e-newsletter about MPA's projects, programs, and events that help protect natural resources in the Chesapeake Bay region. The information is available online at: <https://mpa.maryland.gov/greenport/Pages/default.aspx>

MPA's DMMP education and outreach had 68,444 total engagements by MPA and Partners, with 13,989 of these engagements through events, public meetings, presentations, and classroom programs, etc; and 54,455 of the remaining engagements were from general public visits to Port properties such as Masonville Cove, Hart Miller Island, and Marine Terminals.

According to the Masonville Cove Community Engagement Annual Data Report, in 2022, Masonville Cove Educational Programs engaged a total of 2,567 people among community program participants and general visitors. These visits were characterized by neighboring community members and first-time visitors. Furthermore, 90% of schools engaged were Title I schools, which are a majority of Baltimore City schools, and 26% of all schools engaged were MAEOE Green Schools. Highlights for students include the many interactive educational programs led by the Living Classrooms Foundation, National Aquarium, and MPA's Environmental Education Team.

Tours at Maryland's dredged material placement sites have proven to be excellent teaching tools for both 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.

Twice yearly tours are provided to community stakeholders which have been highly successful in building community relationships and a better understanding about Port environmental projects and programs. The Port's Environmental Education Team provided the first classroom outreach program in both English and Spanish entitled "Diamonds in the Bay." The initiative aimed to increase accessibility within the environmental field, ensuring that every student has access to important science education.

The Maryland Association of Outdoor and Environmental Education (MAEOE) held the annual Maryland Green Schools Youth Summit at Sandy Point State Park, where nearly 600 students participated in leadership activities and learned about the range of green careers offered through MDOT MPA.

Masonville Cove was honored to be one of the host sites for the 2022 "National Celebrate Trails Day". This national event is intended to raise awareness and encourage people across the country to enjoy our nation's beautiful trails and trail systems. There

are approximately three miles of trails at Masonville Cove, a free and fulfilling family-friendly experience.

The Masonville Cove Environmental Education Campus, managed by the Living Classrooms Foundation (LCF), provides under-resourced communities with environmental education, stewardship activities, and academic enrichment. With the support of external donors, the 2022 LCF BEESMART Summer Program (Baltimore Environmental Education Summer Math and Reading Trailblazers) was a major success. Serving 3rd through 5th graders, the program uses STEM (Science, Technology, Engineering, and Math) subjects to increase reading levels, ultimately preventing summer learning loss.

In July 2022, a Memorandum of Agreement for the Masonville Cove Connector was signed by MPA, Federal Highway Administration Eastern Federal Lands Highway Division, National Park Service, and the U.S. Fish and Wildlife Service (USFWS). The Connector is intended to link local communities to the beautiful Masonville Cove. Walkers, joggers, and bicyclists will benefit from the effort, and the project will help fulfill MPA's commitment to South Baltimore communities to restore safe and equitable access to the waterfront as part of the construction of the Masonville DMCF.

In November 2022, the Baltimore Port Alliance (BPA) Environmental Committee united forces with the New Broadway East Community Association and community volunteers to clean out the raised vegetable beds of the Duncan Street Miracle Garden. Located in East Baltimore, the Duncan Street Miracle Garden is used by gardeners from various Baltimore neighborhoods. Picnic tables, painted birdhouses and colorful flowers also make this garden a beautiful place for relaxation, recreation, work, and community gatherings. The food produced there is often donated to churches and soup kitchens.

The 3rd Annual Hart-Miller Island Run took place in October 2022, with approximately 200 visitors and 109 race competitors. The event was possible thanks to partnerships with the Maryland Environmental Service (MES), the Maryland Park Service, Charm City Run, MPA, Friends of Hart-Miller Island, Friends of Maryland State Parks, and awesome volunteers from the North Point - Edgemere Volunteer Fire Department.

In 2022, the BPA hosted two successful Hiring & Career Expos at the Community College of Baltimore County Dundalk Campus, featuring exhibitors from both public and private sectors. The job seekers who joined the event had the chance to learn about available maritime, transportation, and logistics careers in the Baltimore area. The first BPA Hiring & Career Expo in 2023 will take place on May 4. The event continues to be a

great opportunity for companies to showcase their brand and culture within the industry, while attracting talent looking for meaningful job opportunities.

Community members gathered at Masonville Cove in September 2022 to celebrate the National Public Lands Day with a visit from U.S. Fish and Wildlife Service (USFWS) Director Martha Williams. Families had the opportunity to recreate at the site, which includes 70 acres of water and 54 acres of restored wetlands and nature trails in the heart of Baltimore City. The attendees engaged in fun activities such as kayaking, bird banding, monarch butterfly tagging, and tours to the Masonville DMCF.

Awards:

In 2022, the Port of Baltimore was awarded a \$1.8 million grant from the U.S. Environmental Protection Agency (EPA) for the Port's Diesel Equipment Upgrade Program, which replaces older cargo-handling equipment and dray trucks with newer, cleaner, and more efficient models. The grant will help MPA further reduce emissions at the port and surrounding residential neighborhoods.

In recognition of its work, MPA won a planning award for its development of a digital database to track conditions of its terminal lots to predict and plan rehabilitation and repair efforts. MPA also captured an MdQI Modal Award for Projects Under \$5 Million for the demolition and replacement of the vehicle entrance/exit gate at the Dundalk Marine Terminal.

In December 2022, the Port received a top U.S. Coast Guard security assessment for the 14th straight year. The Port received funding towards increased capacity in recent years. More than \$15 million in funds from the Federal Railroad Administration (FRA) will help build four new working rail tracks and two crane rail beams at the Seagirt Marine Terminal at Maryland's Port of Baltimore. The Port also received funding from FRA for its Rail Capacity Modernization Project, which will build four new rail tracks and two crane beams within the Seagirt Marine Terminal. This project will allow for the easy transfer of shipper containers by truck or rail and is expected to be completed in 2025.

After first reeling in the "Most Innovative Stormwater Permit Implementation" category award, MPA went on the next round and won the prestigious grand prize "Best Urban BMP in the Bay" Award from the Chesapeake Stormwater Network.

Two partnership projects, installation of a living shoreline and Baltimore's Trash Wheels, received prestigious MDOT Environmental Excellence Awards, an annual recognition of notable achievements in environmental compliance and sustainable practices across MDOT.

The American Association of Port of Authorities recognized the Port of Baltimore for its Environmental Education E-learning (E3) portal, an environmental education and outreach tool that has successfully brought the Port closer to local communities, while inspiring the next generations of scientists and environmentalists.

Profile Updated April 2023

