FY27 Co-Benefit and Targeting Map Guidance Document:

Link to Referenced Material:

Trust Fund Targeting Map

Introduction

To promote more holistic projects and more consistently identify all the co-benefits of practices and their locations, the Chesapeake and Atlantic Coastal Bays Trust Fund (Trust Fund) will incorporate co-benefits into project selection. The Trust Fund is looking for applications that, in addition to providing cost-effective and measurable nonpoint source pollution reductions, provide co-benefits including but not limited to:

- Restoration of Aquatic Resources (i.e., submerged aquatic vegetation, oyster reefs);
- Climate Resilience;
- Carbon Sequestration;
- Creation of Wildlife Habitat;
- Local Employment Opportunities;
- Improvement or Provision of Recreational Opportunities; or
- Environmental Justice Benefits

Applicants are asked to identify the co-benefits achieved with project implementation by completing the 'Co-Benefits' section of the Common Application, as well as utilizing the targeting map.

Note: the targeting map encompasses five of the seven co-benefits that are able to be spatially depicted. The previous targeting map that utilizes SPARROW to show Trust Fund priority areas is a layer within the map. SPARROW (SPARROW (SPAtially Referenced Regression On Watershed attributes) models which links monitoring data with watershed characteristics and contaminant sources to estimate contaminants transported.

Applicants are welcome to utilize additional data sets that they determine better represent the co-benefit of their project. Those additional data layers should be uploaded to the map or provided as a link for reviewers to access and analyze.

Description of Document:

The Trust Fund Targeting Map Contains 21 layers, and many additional sublayers. The purpose of this document is to provide a resource to interpret layers and sublayers. Below is a table of layers to explain which cobenefits pertain to which layers. For each layer, there is a Definition Section, How to Use Section, and a Legend of Layers.

Some layers may have an asterisk ** symbol to denote that they are a focal layer. Focal layers are layers that most Trust Fund applicants will find useful and that may be used in the review process.

Table of Layers

Layers: (** Indicates Focal Layer)	Habitat	Climate Resilience	Coastal Resiliency	Recreation	Environmental Justice
Coastal Resiliency Assessment (CLIM) *Hazard Reduction by Habitats Layer* *Shoreline Hazard Index* *Priority Shoreline Areas* *Marsh Protection Potential Index* *Community Flood Risk Areas*		X	X		X
SLR Affecting Marsh Migration (CLIM) *Uplands to Wetlands in 2100* *Wetland Adaptation Areas* *(2100, 2070, 2050)* *Sea Level Affecting Marshes* *(2100, 2070, 2050)* *Drowned Lands* *(2100, 2070, 2050)*		X	X		
Climate Ready Action Boundary (CLIM) *0 to 1 foot CRAB Inundated* *1 to 2 foot CRAB Inundated* *Greater than 2 foot CRAB Inundated*		X			
Current Floodplains (CLIM) *Preliminary FEMA Floodplain* *Effective FEMA Floodplain*		X			
Impervious Cover (CLIM)		X			
Urban Heat Island (CLIM)		X			X
**Climate Vulnerability Score (EJ)		X			X
Park Equity Total Score (EJ)				X	X
MDEnviroScreen (EJ)					X
Maryland Public Water Access (REC)				X	
Maryland Water Trails (REC)				X	
BUILD (REST)		X	X		
Current Oyster Sanctuaries (REST)	X				
**Habitat Connectivity Network (REST)	X	X			
Fish Blockage Locations (REST)	X				
**Trust Fund Priority Layer	X	X	X	X	X
Targeted Ecological Areas (REST)	X	X			

Climate Resilience

Coastal Resiliency Assessment(CLIM) -
Definition: These layers identify priority restoration and conservation areas that would enhance coastal resiliency and reduce risk to communities impacted by sea level rise, inundation, erosion, and other coastal hazards.

How to Use: There are several layers in the Climate Resiliency Assessment which have similar intended uses. For example, the Shoreline Hazard Index can be used to identify locations that may benefit from restoration due to being exposed to relatively high levels of storm-induced erosion and flooding such as through living shorelines. Inputs to the model included 6 physical variables (geomorphology, elevation, sea level rise, wave power, storm surge height and erosion rates) and 5 habitat types (forest, marsh, dune, oyster reef and underwater grass).

Legend of Layers:
Hazard Reduction by Habitats Layer: the impact of hazard reduction by habitats on communities
High: Priority for hazard reduction projects, most likely to benefit communities (Dark Green)
Low: Lower Priority for hazard reduction projects, less likely to benefit communities (Orange)

Shoreline Hazard Index: the impact of protective coastal habitat on protecting communities
High: Priority for Shoreline Hazard Projects, most likely to benefit communities (Red)
Low: Lower Priority for Shoreline Hazard Projects, less likely to benefit communities (Blue)

Priority Shoreline Areas
Tier 1: Priority shoreline for hazard reduction, most likely to benefit communities (Orange)
Tier 2: Lower priority shoreline for hazard reduction, less likely to benefit communities (Red)

Marsh Protection Potential Index: ability of a marsh to protect vulnerable communities
Very High: High Priority marsh area for restoration, most likely to benefit communities (Blue)
Very Low: Low Priority marsh area for restoration, less likely to benefit communities (Orange)

Community Flood Risk Areas: residential areas at risk to coastal flooding
Very High: Flood Reduction Projects most likely to benefit communities (high risk) (Red)
Very Low: Flood Reduction Projects less likely to benefit communities (low risk) (Blue)

SLR Affecting Marsh Migration (SLAMM) -
Definition: This layer shows the impacts sea level rise may have on Maryland's coastal marsh system, by modeling the impacts of sea level rise with marsh migration potential and habitat corridors. The Sea Level Affecting Marshes Model (SLAMM) was run for all 16 coastal counties and Baltimore City.

How to Use: Use this layer to identify areas of the state which may benefit from conservation actions such as beneficial use of dredged material, conservation easements, and/or wetland restoration due to sea level rise.

Legend of Layers:
Uplands to Wetlands in 2100:
Projected areas that will convert to wetlands by 2100 (SLAMM 2021)

Wetland Adaptation Areas 2100:

High Priority areas for wetland restoration, migration, and habitat corridors, greatest potential for high quality wetlands by 2100

Wetland Adaptation Areas 2070:
High Priority areas for wetland restoration, migration, and habitat corridors, greatest potential for high quality wetlands by 2070

Wetland Adaptation Areas 2050:
High Priority areas for wetland restoration, migration, and habitat corridors, greatest potential for high quality wetlands by 2050

Sea Level Affecting Marshes Model (SLAMM 2021) by 2100:
Projected changes to 20+ land classifications by 2100

Sea Level Affecting Marshes Model (SLAMM 2021) by 2070:
Projected changes to 20+ land classifications by 2070

Sea Level Affecting Marshes Model (SLAMM 2021) by 2050:
Projected changes to 20+ land classifications by 2050

Drowned Lands in 2100:
Projected areas that will be flooded/drowned by 2100 (SLAMM 2021)

Drowned Lands in 2070:
Projected areas that will be flooded/drowned by 2070 (SLAMM 2021)

Drowned Lands in 2050:
Projected areas that will be flooded/drowned by 2050 (SLAMM 2021)

Climate Ready Action Boundary (CRAB)
Definition:
The Coast Smart Climate Ready Action Boundary or CS-CRAB represents the depth of flooding given a 3 foot (vertical and associated horizontal) increase in water surface elevation above the current effective FEMA 100-year floodplain. This layer is to be used as part of the siting and design criteria for the Coast Smart Council. Phrased another way, this takes the FEMA 100-year floodplain using current sea levels, and maps what a 3 foot increase (from a storm event, sea level rise, subsidence, or combination) in water surface elevation (both vertical and horizontal) would look like for the 100-year floodplain.

How to Use:
Use this layer to consider the potential impact of sea level rise and flooding to your project. For example, is your proposed project's design and siting appropriate if the CRAB layer indicates potential future inundation from sea level rise and flooding? Certain Trigger points, such as construction of a new structure or highway within the CS-CRAB that is greater than 50% state-funded could require you to fill out the Coast Smart Project Screening Form and build to standards described in the Coast Smart Construction Program. If your project is subject to the Coast Smart Construction Program, you must fill out the project screening form and attach this with required project documents. Additional information can be found here https://dnr.maryland.gov/ccs/Pages/CoastSmart-Council.aspx Most Trust Fund

projects will not be subject to the Coast Smart Construction Program given its applicability, however, if a project is located within the CRAB boundaries, it is important to explore if your project has a sufficient lifespan, will address potential future challenges, and risk level for future inundation. Does your project have sufficient lifespan?

Legend of Layers:
0 to 1 foot CRAB Inundated: Water depth of 0-1 ft assuming 3 ft increase (vertical and horizontal) above current 100 year floodplain.
1 to 2 foot CRAB Inundated: Water depth of 1-2 ft assuming 3 ft increase (vertical and horizontal) above current 100 year floodplain.
Greater than 2 ft CRAB inundated: Water depth greater than 2 ft assuming 3 ft increase (vertical/horizontal) above current 100 yr floodplain.

Current Floodplains (CLIM)
Definition:
This layer is the Effective Floodplain layer, the official regulatory floodplain as adopted by FEMA and provided to a local jurisdiction for the National Flood Insurance Program (NFIP).

How to Use:
Use this layer to identify the regulated floodplain and flood prone areas. Many stream and wetland restoration projects will be located within the regulated floodplain and require permits for project design and implementation. Applicants are encouraged to coordinate with the floodplain manager of the local county or municipality where the project is located. Consider placement of stormwater practices upslope from the floodplain to help improve water quality and quantity concerns.

Legend of Layers:
Preliminary FEMA Floodplain: Occurs before official map adoption, not yet reviewed by community
Effective FEMA Floodplain: Official regulatory floodplain as adopted by FEMA and used by National Flood Insurance Program

Impervious Cover
Definition:
This layer shows the relative amount of impervious cover in each 12 digit watershed relative to all other 12 digit watersheds in the state of Maryland. Watersheds are ranked from 1 to 10 in terms of percent imperviousness; 10 being the highest % impervious, 1 being the lowest % impervious.

How to Use:
Use this layer to help identify watersheds that may benefit from stormwater best management practices or impervious surface removal. Watersheds with high amounts of impervious surfaces may have more severe climate change induced flooding events due to relatively greater runoff. Stormwater best management practices may help minimize flooding in these locations.

Urban Heat Island (CLIM)
Definition:
Heat islands are urbanized areas that experience higher temperatures than outlying areas. Structures such as buildings, roads, parking lots, and other infrastructure absorb and re-emit the sun's heat more than natural landscapes such as forests and water bodies. Impervious areas, where these structures are highly concentrated and greenery is limited, become "islands" of higher temperatures relative to

outlying areas. Daytime temperatures in urban areas are about 1–7°F higher than temperatures in outlying areas and nighttime temperatures are about 2-5°F higher.

How to Use:
Use this layer to help site urban tree planting projects. Areas with a greater urban heat island effect may greatly benefit from street trees and green street projects which can dramatically reduce temperatures.

Note:
This layer is a large data set and therefore may take additional time to fully load, recommend zooming to preferred extent rather than loading entire state***Environmental Justice (EJ) Benefits***

EJ- Climate Vulnerability Score
Definition:
The Climate Vulnerability Score (CVS) evaluates communities disproportionately affected by climate impacts at the census tract level using MDEnviroScreen's Environmental Justice Score as a proxy for underserved and overburdened communities, the proportion of tree canopy cover within a census tract, and its exposure to four additional climate indicators.

How to Use:
Use this layer to identify parts of Maryland with a high climate vulnerability due to environmental factors such as tree canopy coverage, potential for urban heat islands, drought, and flooding, by assessing potential community impacts.

Legend of Layers:
High Vulnerability (Yellow), Moderate Vulnerability (Orange), Low Vulnerability (Purple), and Baseline Vulnerability (Blue)

EJ- MDEnviroScreen

Definition:
The MDEnviroScreen layer from MDEnviroscreen's Environmental Justice Tool identifies overburdened and underserved communities. Overburdened communities are defined as any census tract that scored in at least the 75th percentile on three or more of these factors: PM2.5, Ozone, Diesel PM, Cancer Risk, Respiratory Hazard Index Risk, Traffic Proximity, TRI Facility Proximity, Hazardous Waste Landfill Proximity, Lead Paint Indicator, Risk Management Facility Proximity, Superfund Proximity, Hazardous Waste Proximity, Wastewater Discharge Indicator, Brownfield Proximity, Power Plant Proximity, CAFO Proximity, Mining Operation Proximity, Low Birth Weight, Asthma Discharges, Myocardial Infarction, and Lack of Broadband. Underserved communities are defined as any census tract that is at least 25% Low Income, at least 50% Non-White or Hispanic, or at least 15% Limited English Proficiency. The EJ Score is calculated by averaging the percentile scores for each category (Pollution Burden Exposure, Pollution Environment Effects, Sensitive Populations, and Socioeconomic/Demographic) and combining them into an averaged percentile.

How to Use:
Use this layer to identify parts of Maryland that may be exposed to greater environmental risks such as pollution and therefore may benefit from restoration projects.

Legend of Layers:
There are four classifications: Overburdened and Underserved (Orange), Only Overburdened (Tan), Only Underserved (Light blue), Not defined as Overburdened or Underserved (Green).

EJ- Park Equity Total Score
Definition:
These layers can be used to determine which areas in the State are in need of new park space and which communities may be currently underserved or underutilized by existing park space. Promoting park equity is one way to ensure communities - regardless of socio-economic, demographic, or geographic profile - have equal opportunity to a healthy environment.

How to Use:
Use this layer to identify parts of Maryland with a lack of recreational amenities that may benefit from enhanced green spaces which could include green streets, tree plantings, etc.

Legend of Layers:
There are five different scores from highest need of park space (Red) to lowest need of park space (White).

Maryland Public Water Access Sites
Definition:
Provides information on Maryland's public water access sites.

How to Use:
Use this layer to identify parts of Maryland where your project would improve or create public access to water. This is a helpful map to describe the rarity of public access to water in certain project areas and to detail how increased access would be a major benefit to a project site. Please note that restricted community access (like a private neighborhood beach) is NOT considered public access, and therefore, is not included on this map.

Maryland Water Trails
Definition:
Provides information on Maryland's State-designated water trails.

How to Use:
Are there scenic water trails adjacent to your proposed boat launch facility that may enhance public access to the water trail? Use this layer to identify potential opportunities to provide additional public access to a water trail.

Restoration of Aquatic Resources and Creation of Wildlife Habitat

BUILD
Definition:
Beneficial use projects, such as marsh enhancement, beach nourishment, island restoration and shoreline stabilization, can increase shoreline and community resilience while dramatically reducing the financial costs of dredged material disposal and coastal restoration projects. By aligning restoration and dredging projects, planners can save on costs that would otherwise be incurred to transport

dredged material to an upland placement site or to bring fill material to a restoration site. Further, placement of dredged material in restoration projects can provide important environmental and social benefits. The key to implementing beneficial use projects is ensuring that restoration and dredging projects spatially align. BUILD, or “Beneficial Use: Identifying Locations for Dredge”, is an ArcGIS layer that enables the spatial identification of beneficial use of dredged material opportunities. This tool primarily highlights dredging work done in partnership with the Waterway Improvement Fund (WIF) and includes permit information through MDE, facilitating the alignment of dredging with restoration efforts.BUILD allows project planners to proactively identify sources of dredged material to place in restoration projects, or vice versa.

How to Use:
Use this layer to identify potential beneficial use opportunities near proposed dredging projects.

Current Oyster Sanctuaries
Definition:
This layer shows public shellfishery areas in Maryland.

How to Use:
If you are proposing an oyster restoration, it could be helpful to use this map to see if there is an Oyster Sanctuary nearby to encourage natural spat set or to enhance the benefits associated with the existing oyster population and reef community.

Legend of Layers:
Layers present on this map include: Upcoming Dredging (upcoming navigational channel dredging funded by MDNR), Potential restoration Projects (Site Identified by MDNR that could benefit from Restoration), Lost Islands, Dredged Material Placement Sites, Navigational Channel Depth Surveys, Previous Dredge Projects, USACE NAV Channels, Dredging Project Buffers (2 or 4 mile buffers around upcoming dredging projects).

Maryland’s Habitat Connectivity Network (Formerly Green Infrastructure Network)
Definition:
Maryland's Habitat Connectivity Network shows ecologically valuable undeveloped lands that provide natural resource value such as ecosystem services and economic value. This updated dataset provides a detailed breakdown of Maryland’s Green Infrastructure, which serves as vital habitat for wild species. It also contributes in many ways to the health and quality of life for Maryland residents through a connected network of hubs and corridors for forest, wetlands, and aquatic ecosystems. The Green Infrastructure Assessment was developed to provide decision support for Maryland's Department of Natural Resources land conservation programs to identify and assess green infrastructure.

How to Use:
If you are proposing a project that could help link natural corridors or hubs, use this tool to find out if the proposed project area is adjacent to valuable natural areas.

Legend of Layers:
Upland, Wetland, and Aquatic Hubs: large existing contiguous blocks of forests and wetlands as well as aquatic waterways that meet specific ecological criteria including aquatic organism passage
Upland and Aquatic Corridors: linear features connecting hubs that enable animals, fish, and plant propagules to move between hubs

Upland and Aquatic Restorable Gap: areas within corridors that are not currently part of the optimal natural land use type and that wildlife avoid/pass through quickly, and that can not be easily restored, such as impervious surfaces, roads, or buildings
Upland and Aquatic Nonrestorable Gap: land use classes that are not currently optimal for animal movement, but that could be good candidates for restoration, such as low vegetation and shrub scrub areas.

Fish Blockage Locations
Definition:
This layer shows the locations of stream blockages such as dams, perched culverts, etc that limit the migration of fish through stream networks.

How to Use:
Use this layer to find out if a project site has already been identified by the State as a location in need of restoration to improve fish passage. These locations would be especially helpful to reference if your project involves a dam removal, culvert removal, or stream daylighting in an area that is identified as preventing fish passage.

Targeted Ecological Areas
Definition:
Targeted Ecological Areas (TEAs) are lands and watersheds of high ecological value that have been identified as conservation priorities by the Maryland Department of Natural Resources (DNR) for natural resource protection. These areas represent the most ecologically valuable areas in the State: they are the "best of the best".

How to Use:
Use this layer to find out if your project area falls within or next to a TEA, which could describe how a proposed project would support wildlife corridors or other biodiversity benefits beyond just the project area.