Updated Phase 7 E3 Scenario for the Developed Sector

This draft was developed for the June 16, 2026 Urban Stormwater Workgroup meeting. It is for the updated draft scenario for review and approval by the workgroup. No requested changes or concerns were raised with the April draft from USWG members. This version includes E3 assumptions for shoreline management, which were not included in the April version, as well as updated numbers for the tree canopy and forestry practices, following feedback received from the Forestry Workgroup.

Phase 6 E3 Scenario

The Phase 6 E3 Scenario for the Developed sector is presented here for context:

BMP	**LU**	**Treatment Assumption**
Retrofits	IC, TIC & PC	RR Retrofits sized to treat 1.5 in IA for all urban land uses
New Development	IC, TIC & PC	All new development has RR BMPs sized for 2.0 inch IA
Street Cleaning	TIC	100% TIC swept using SCP-1
UNM Plans	PC	100% of PC has UNM Plans; 20% High risk/80% Low risk
State Fertilizer Laws	PC	All Bay States Receive Credits for P and N Fertilizer Laws
Gray Infrastructure and Storm Drain Cleanouts	SC	5% of Urban N and P load removed due to both credits
Stream Restoration	SC	15% of stream network restored at twice the default SR value
ESC	C	100% of all construction sites are treated to ESC Level 3 and have high risk UNM plan
Forest Conservation and Urban Growth Reduction	F	All projected loss of forest from development is retained or planted in forest
Riparian Buffers on Urban	PC	10% of pervious riparian areas without natural vegetation (forest and wetland) associated with urban lands are buffered as forest for each modeled hydrologic segment in the CB watershed
Tree Planting on Urban	F, PC	Addressed by Forest Conservation and urban riparian buffers

Controls on Extractive	B/E	Controls of the runoff from all extractive land use areas are assumed to be to a degree so that the loads are equal to nutrient and sediment edge-of-stream loads from pervious urban under E3 conditions
IC=Impervious; TIC=Transportation Impervious; PC=Pervious; SC=Stream Corridor; F=Forest; B/E=Barren/Extractive		

Proposed Phase 7 E3 Scenario for the Developed Sector

BMP	**LU**	**Treatment Assumption**
Retrofits	Developed	RR Retrofits sized to treat 1.5 in IA for all urban land uses
New Development	Developed	All new development has RR BMPs sized for 2.0 inch IA
Street Cleaning	Roads, TC over Roads	100% Roads swept using SCP-1
UNM Plans	Turf, TC over turf, Solar pervious	100% of turf, TC over turf, and solar pervious have UNM Plans BMP; For Turf and TC over Turf - 50% Implement UNM W/ a Soil Test (BMP #1), and 50% Implement Non-Fertilized Turf (BMP#3). For Solar Pervious, 100% covered by BMP #3.
Gray Infrastructure and Storm Drain Cleanouts	Developed	5% of Urban N and P load removed due to both credits
Stream Restoration	Stream Bed and Bank	Stream bed and bank loads will be reduced by 50% for 15% of stream network, dispersed evenly across each modeled hydrologic segment in the CB watershed
ESC	Construction	100% of all construction sites are treated to ESC Level 3 and have UNM plan (BMP #1)
Forest Conservation and Urban Growth Reduction	Forest	All projected loss of forest from development is retained or planted in forest.
Riparian Buffers on Urban	Pervious Developed	30% of turf grass acres (MS4, CSS, Non-Regulated) within the 35 ft riparian area are buffered as forest for each modeled hydrologic segment in the Chesapeake Bay watershed

Tree Canopy Expansion and Forest Planting on Urban	Pervious Developed	20% of turf grass acres (MS4, CSS, Non-Regulated) will be converted to Tree Canopy over Turfgrass (TCTG) using the Urban Tree Canopy Expansion BMP, and an additional 20% of turf grass acres will be converted to Forest using the Urban Forest Planting BMP.
Controls on Extractive	Extractive	Controls of the runoff from all extractive land use areas are assumed to be to a degree so that the loads are equal to nutrient and sediment edge-of-stream loads from compacted pervious under E3 conditions
Impervious Cover Removal	Roads, Buildings and Other, TC over Impervious	1% of total impervious cover (Roads, Buildings and Other, and TC over Impervious) will be converted to Turfgrass per the ICR BMP.
Shoreline Management	Shoreline	80% of unprotected shoreline linear feet will be managed by the Living Shoreline BMP and receive the default rate for non-conforming practices

Notes:

- No proposed Conservation Landscaping implementation because efficiency removal (39% TN and 25% TP) is lower than proposed E3 conditions for Retrofits and New Development and would apply to the same acres.
- Continuous Monitoring and Adaptive Conteol (CMAC), Coagulant Enhanced Treatment (CET) and Floating Treatment Wetlands (FTWs) are all retrofits to ponds, which are ST practices. As such, none of these strategies represent an increase in pollutant removal over the proposed E3 scenario which is based on RR implementation on 100% of urban lands. CET comes close for TP removal, but at a significant expense to TN.
- For UNM, 75% of residents from surveys cited in UNM report say they fertilize at least once a year. This scenario assumes there is an uptick in residents who chose not to fertilize, and the remainder use a soil test to develop a targeted UNM plan.
- SR - Protocol 1 is based on measured bank erosion rates, which are then reduced by 50% post-restoration in the absence of post-restoration monitoring. We have stream bed and bank loads, so if we assume the same magnitude of implementation as Phase 6 (15%), this approach should square the Protocol 1 approach within the model parameters of E3.
- Tree Canopy Outcome is 45,000 acres of canopy by 2040 across all sectors, and 202,000 acres of new forests across all sectors.There was ~1.7 million acres of turf grass in 21/22, so under this E3, 347,908 acres of turf would go to TCTG and 347,908 acres would go to Forest for a total conversion of nearly 695,815 acres.
- There was 53,948 acres of turf in the 35 ft buffer zone for 21/22, so 30% would represent a conversion of 16,184 acres to forest

- The VIMS shoreline management model was used, which estimates that 82.5% of shoreline ft would be suitable for living shoreline. Recommended Living Shoreline" includes any shoreline in the VA Shoreline Management Model version 5.1 with a general category of "Living Shoreline" (includes the "Non-Structural Living Shoreline," "Non-Structural Living Shoreline," and "Plant Marsh with Sill" recommendations) and any shoreline in the MD Shoreline Stabilization Model with a recommendation of "Living Shoreline."