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WWTWG

E3 and No-Action Scenario Overview

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E3 and No-Action: TMDL Appendix J

This appendix to the Chesapeake Bay TMDL offers definitions for the different modeling scenarios initially used for the development of controllable loads and partner allocations.

Examples of scenarios used in the past to help produce planning targets:

- 1985 No-Action
- 2010 No-Action
- All Forests
- Tributary Strategy
- E3
- Etc.

American avocets can be found living in open areas with little vegetation and shallow waters. (Photo by Marielle Scott/Chesapeake Bay Program)

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E3 and No-Action: Controllable Loads

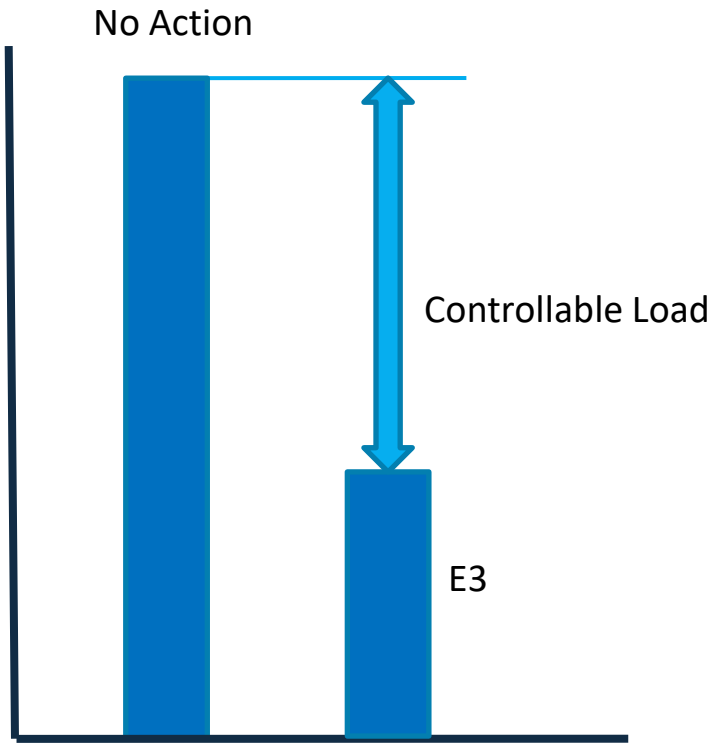
[Chesapeake Bay TMDL Section 6: Establishing the Allocations For The Basin-Jurisdictions]

Section 6.3.2: Determining Controllable Loads

Two theoretical scenarios are created to determine the appropriate context for controllable loads (the difference between these two scenarios' loads).

1. **The No-Action scenario** is indicative of a theoretical worst case loading situation in which no controls exist to mitigate nitrogen, phosphorus, and sediment loads from any sources.

2. **The E3 scenario** represents everything by everyone everywhere—represents a theoretical best-case possible situation, where a certain set of possible BMPs and available control technologies are applied to land, given the human and animal populations, and wastewater treatment facilities are represented at highest technologically achievable levels of treatment regardless of costs.



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E3 Overview

The E3 Scenario is an estimate of the application of management actions … with the theoretical maximum practicable levels of managed controls on all pollutant load sources. Generally, E3 scenario implementation levels and their associated reductions in nutrients and sediment could not be achieved for many practices, programs and control technologies.

Used alongside the No-Action scenario, this calculation of controllable loads will address all three rules for determining Planning Targets:

- Planning Targets must meet water quality standards
- Those that pollute more should do more.
- Actions already taken count toward the goals.

Eastern brook trout swim at the Virginia Living Museum in Newport News, Va., on Dec. 30, 2018. (Photo by Will Parson/Chesapeake Bay Program)

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Overarching Points to Consider

Planning targets are within the range of loads between the No-Action and E3 are for all sources in an area. They do not determine the amount needed from each sector to reach the planning targets.

Using the same methodology does not mean no changes were made, as relative effectiveness of basins and current land use assumptions did change based on current science and other updates planned for the model.

Scarlet oak during fall. (Photo courtesy of Ashley M Bradford/iNaturalist CC BY-NC, cropped)

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WQGIT and Sector Workgroup Decisions:

- Scenario (E3) Inputs- WWTP and relative effectiveness governed effort for point source vs non-point source
- Scenario Base Year –what base year should be utilized for the scenarios. 2010 was used in the past in both 2010 and 2017.
- Phase III WIP – review these planning efforts and does anything else need to be done to achieve WQS?

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Wastewater Scenario Input Definition

Scenario		2010 No Action	Previous Modified E3	Draft E3
Definition		No management action. Secondary Treatment at the same level everywhere with TS flows	LOT Everywhere Tier 4 Level	LOT Everywhere
Concentration	Sig Municipal Plants	TN=18 mg/l and TP =3 mg/l BOD=30 mg/l, DO=4.5 mg/l and TSS=15 mg/l	TN=3 mg/l and TP=0.1 mg/l BOD=3 mg/l, DO=6 mg/l and TSS=5 mg/l	TN=3 mg/l and TP=0.1 mg/l BOD=3 mg/l, DO=6 mg/l and TSS=5 mg/l
	Sig Industrial Plants	Highest Loads on record, or TS loads if greater BOD=30 mg/l, DO=4.5 mg/l and TSS=15 mg/l	TS sig industrial loads adjusted by the percentage of equivalent sig municipal average load reduction from TS to E3 level by state BOD=3 mg/l, DO=6 mg/l and TSS=5 mg/l	WIP loads adjusted by the percentage of equivalent sig municipal average load reduction from WIP to E3 level by state. BOD=3 mg/l, DO=6 mg/l and TSS=5 mg/l
	Non-sig Municipal Plants	TN=18 mg/l and TP =3 mg/l BOD=30 mg/l, DO=4.5 mg/l and TSS=15 mg/l	TN=8 and TP=2 or TS values if less BOD =5 mg/l, DO=5 mg/l and TSS= 8 mg/l	TN=8 and TP=2 or the same level as sig plants if ENR is required BOD =5 mg/l, DO=5 mg/l and TSS= 8 mg/l
	Non-sig Industrial Plants	Tetra Tech estimated non-sig industrial data. BOD=30 mg/l, DO=4.5 mg/l and TSS=25 or 45 mg/l	Tetra Tech estimated non-sig industrial data adusted by the percentage of equivalent reduction from No-Action (18 mg/l TN, 3mg/l TP) to E3 (3 mg/l TN, 0.1 mg/l TP) BOD =5 mg/l, DO=5 mg/l and TSS= 8 mg/l	State estimated non-sig industrial data adusted by the percentage of equivalent reduction from No-Action (18 mg/l TN, 3mg/l TP) to E3 (3 mg/l TN, 0.1 mg/l TP) BOD =5 mg/l, DO=5 mg/l and TSS= 8 mg/l
Flow		TS flows for sig plants 2006 data or newly submitted non-sig data for non-sig plants	TS flows for sig plants 2006 data or newly submitted non-sig data for non-sig plants	WIP flows for sig plants 2006 data or newly submitted non-sig data for non-sig plants
CSO		2003 Estimates	100% CSO overflow reduction	100% CSO overflow reduction
Septic Systems		No any septic BMP	10% of septic systems connected to WWTP Remaining septic system applied 55% TN reduction for denitrification and pumping BMP	10% of septic systems connected to WWTP Remaining septic system applied 69% TN reduction for the most efficent combined ex situ and in situ BMPs.

Note: The proposed changes are highlighted in red. The previous version definitions was modified in June 2010. Both TS (tributary strategy) and WIP used design flow for significant plants. 100% CSO overflow reduction is assumed through 100% storage and treatment.

Phase 6 E3 Assumptions approved by the WQGIT 8/2017

- How much do these assumptions still make sense (theoretically)?
- Is anything standing out to you now that likely needs alteration?

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No-Action and E3 Discussions Timeline for Review and Completion

Initial Input Overview and Discussions:

- **WQGIT/AgWG/FWG/USWG already had overview discussion**
- **Wastewater Treatment WG:** 2/26/26 (Today!)

Timeline:

- 6-8 month review window (similar to Phase 6 review timeline) to complete scenario and inputs before 2027.
- March/April for next discussion

Thank you!

Questions?

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