Non-Regulated Developed BMP Reporting

PA DEP

10/21/2025

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Regulatory Requirements

§ 102.5. Permit requirements

(a) … earth disturbance activity that involves equal to or greater than 1 acre of earth disturbance … shall obtain an individual NPDES Permit or coverage under a general NPDES permit for Stormwater Discharges Associated With Construction Activities prior to commencing the earth disturbance activity.

§ 102.8. PCSM Requirements

(a) PCSM Applicability - … disturbance activity that requires permit coverage under this chapter … requires compliance with this chapter shall be responsible to ensure that a written PCSM Plan is developed, implemented, operated and maintained...

(f) PCSM Plan Contents - A long-term operation and maintenance schedule, which provides for inspection of PCSM BMPs, including the repair, replacement, or other routine maintenance of the PCSM BMPs to ensure proper function and operation.

(g) PCSM Plan stormwater analysis - PCSM Plans for proposed activities requiring a permit … require the following additional information: … Analysis demonstrating that PCSM BMPs will … or manage the net change for storms up to and including the 2-year/24-hour storm event when compared to preconstruction runoff volume and water quality.

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Credit Duration

Decision: *The WQGIT approved the BMPVAHAT recommendation that credit durations for Wetland Restoration, Wetland Rehabilitation, and Wetland Creation be removed due to regulatory programs in place to provide oversight to these practices. If technology becomes available to use mapping tools that more accurately portray land use changes and determine wetland gains and losses in the Bay watershed, the WQGIT will consider the reestablishment of credit durations for these practices.*

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Technical Memo

Table 1: Percent of Developed Land in Chesapeake Bay Watershed By Regulatory Category [1]

Bay State	*Non-Regulated* [2]		*MS4 Permittees* [3]		*Combined Sewer* [4]	
	%TC [5]	%IC [6]	%TC	%IC	%TC	%IC
DE	63	26	7	4	0	0
DC	5	6	22	30	8	27
MD	18	7	47	29	<1	<1
NY	54	32	6	5	1	1
PA	52	21	13	9	2	3
VA	48	22	16	15	<1	<1
WV	54	17	18	9	1	1
BAY Average [7]	42%	18%	18%	14%	2%	5%

Notes:

[1] Based on Phase 6 Model. 2013 progress runs, as derived from CAST, percentages may not sum to 100% due to rounding errors

[2] Defined as a community that is not dense enough to be regulated by a Phase 2 stormwater permits

[3] Includes large communities regulated under Phase 1 Ms4 permits (pop <100,000) and smaller communities regulated under Phase 2 MS4 permit (pop <10 to 25K). Area split is roughly 50:50

[4] Areas of older cities that are regulated as combined sewer overflow systems

[5] Turf cover includes turf and tree canopy over turf

[6] Impervious cover includes buildings and other IC, roads, tree canopy over IC and construction

[7] arithmetic average

April 2nd, 2018, technical memo to WQGIT from Chesapeake Stormwater Network on Phase 3 WIP Challenges

Via the April 2nd 2018 technical memo to the Water Quality Goal Implementation Team.

- On a Bay Average 60% is Non-Regulated
- “Projections of future growth in the watershed indicate that this kind of low density, exurban development will continue in most Bay states through 2025”.

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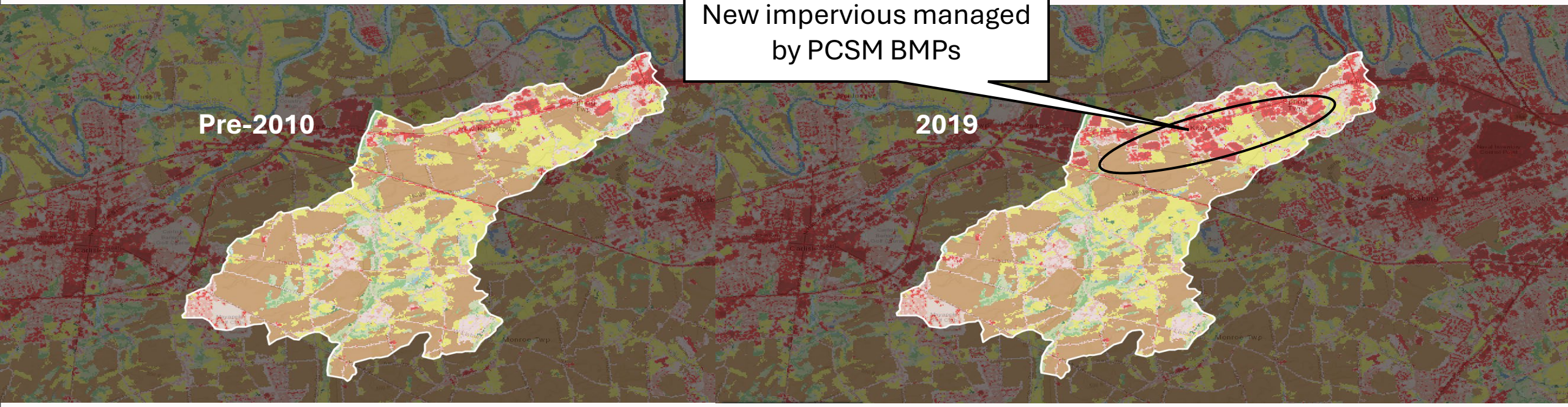
Impervious Managed by PCSM BMPs



Because of the Construction NPDES permit requirements, we know that the majority of runoff from new impervious (implemented since 2010) is being managed by PCSM BMPs.

For example, these images show the land use change that has occurred the Hogestown Run HUC-12 in Cumberland County.

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Alternative Reporting Approach

Calculation method to account for all PCSM BMPs implemented in PA CBWS under current NPDES permit requirements

- **Step 1** - Use Back-CAST data to determine new impervious acres in PA CBWS since 2013.
- **Step 2** - Apply a 10% Margin of Safety and 90% Compliance Rate to determine the impervious acres treated by PCSM BMPs.
- **Step 3** – Use conservative estimate for 2yr/24hr storm to calculate runoff generated by impervious acres treated by PCSM BMPs (treated volume).
- **Step 4** - Use the Retrofit Stormwater Treatment (“ST”) BMP to report in CAST the acre-feet of volume treated, and impervious area treated, in PA CBWS.

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Impervious Acres

- Run Base Conditions reports for the 2013 & 2024 Progress Years at the state scale, limited to CBWS only. Apply filters to focus on the following load sources using the Land Use Acres tab.
- MS4 & CSS Excluded.
- Sum these load sources to state level of 2013 and 2024 to get Post BMP Acres.

LoadSource
Non-Regulated Buildings and Other
Non-Regulated Roads
Non-Regulated Tree Canopy over Impervious
Non-Regulated Tree Canopy over Turf Grass
Non-Regulated Turf Grass

2013 Progress_PostBMPAcres	2024 Progress_PostBMPAcres
1,187,132	1,220,475
New Imperviou Acres since 2013	33,343

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NPDES Calculations

- Differences in impervious acres between the 2024 and 2013 Progress Years were calculated and recorded in a column titled "New Impervious Since 2013 (acres)".
- Of these new impervious acres, conservatively, 90% are considered managed under Post-Construction Stormwater Management (PCSM). NPDES Program Staff at PA DEP has applied formulas to calculate PA's CBWS Volume in Acre-feet to track and report.

Geography	2013 Post-BMP Acres	2024 Post-BMP Acres	New Impervious Since 2013 (acres)
PA CBWS	1,187,132	1,220,475	33,343

Percent of New Impervious Managed by PCSM BMPs	Impervious Managed by PCSM BMPs (acres)
90%	30,009

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Blanket Reduction Method

- The Retrofit Stormwater Treatment BMP was selected as the catalyst for the blanket reduction.
- To apply the Retrofit Stormwater Treatment BMP, three measure units included are:
  - Acres, Acre-Feet (Volume), and Impervious Acres
- Acres: Calculated based on 90% of the new impervious acres (the difference between 2013 and 2024).
- Acre-Feet (Volume): Derived from the PA DEP team's calculations based on the 2-year, 24-hour storm events.
- Impervious Acres: A factor of 90% of all impervious acres managed by PCSM was applied to determine the measure extent for impervious acres.
- A Retrofit Stormwater Treatment BMP would be reported yearly based upon the new progress year and prior progress year’s impervious acre changes.

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CAST Scenarios; Load Isolation

- The CAST scenarios were developed using the 2024 Progress Year, copying the existing 2024 Progress Year scenario without BMPs to apply the correct base conditions.
- Following the initial set up of the scenario, the 2024 Progress Year was selected as a single “existing scenario.” (Control)
- Then the input of the three measure units for Retrofit Stormwater Treatment for PA CBWS was input in the (Test) scenario.

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Outcome

- Using 2024 Progress Year compared to the WIP3 CAST 23 version, PA needs to reduce 18,078,496 lbs. of Nitrogen
- This method would allow for reduction accountability of 106,413 lbs. of Nitrogen for the last 11 years, averaging 9,674 lbs. of Nitrogen reduction per year.
- Reductions:
  - The initial submission for the past 11-year period has achieved a 0.58% reduction in the total nitrogen load reduction goal across all sectors.
  - Within the developed sector specifically, a 13% reduction towards the nitrogen reduction goal is achieved using this method.
  - Year over year estimate is 0.05% Nitrogen Load Reduction on all sectors and 1.23% Nitrogen Load Reduction on developed specific sector.

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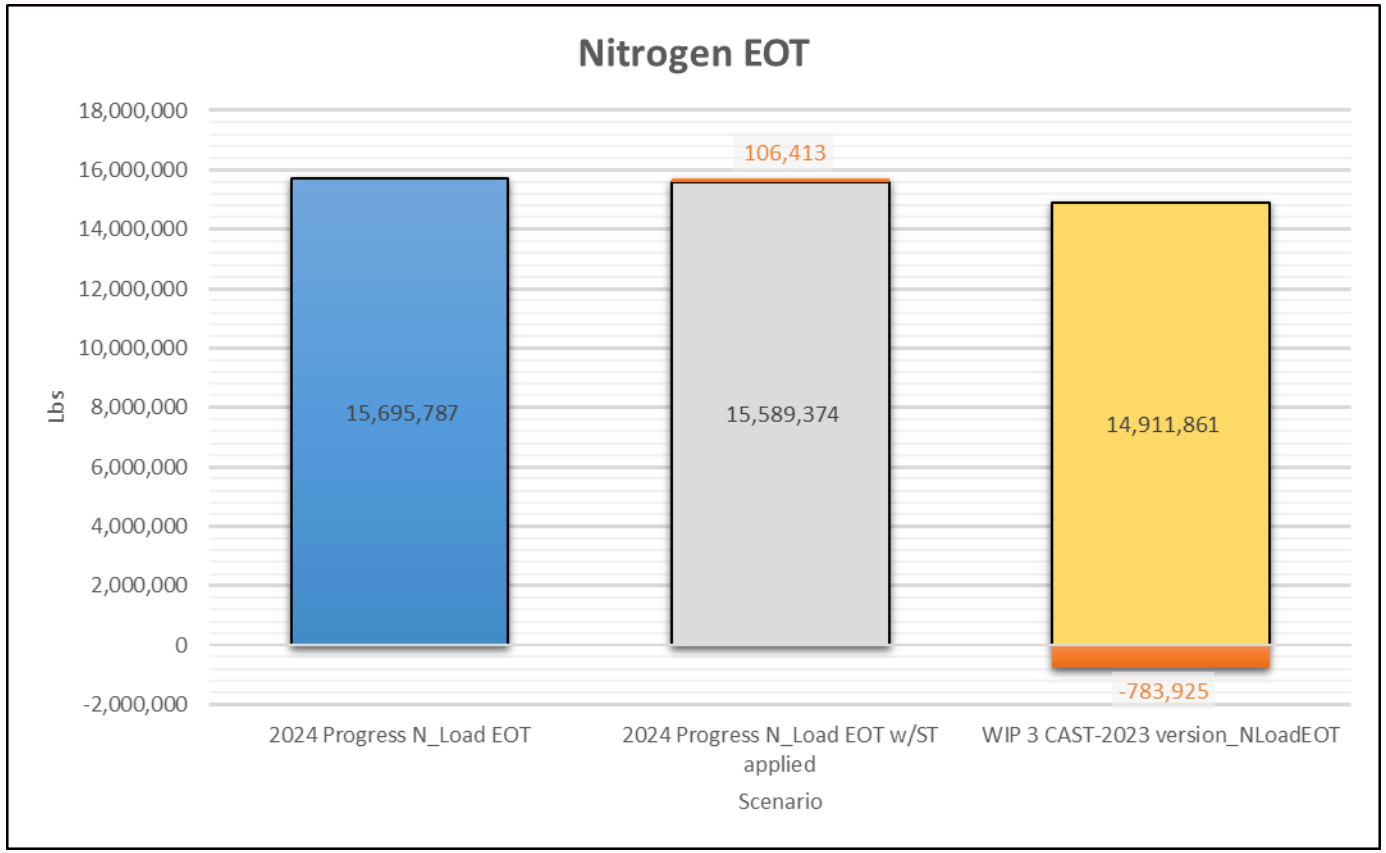
Outcome



- Nitrogen at EOT:
  - Blue = 2024 Progress at Developed only Sector
  - Gray = 2024 Progress scenario Developed Sector only load with PA CBWS wide RST BMP applied
    - Orange 106,413 lbs = load reduction to Non-Regulated Developed Sector Only
  - Gold = WIP 3 CAST23 Version of Developed only Sector target load
    - Orange “783,925” lbs needed to be reduced in Developed Only Sector to meet WIP 3 Target

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Get In Touch

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The Department of Environmental Protection's mission is to protect Pennsylvania's air, land and water resources and to provide for the health and safety of its residents and visitors, consistent with the rights and duties established under the Environmental Rights Amendment (Article 1, Section 27 of the Pennsylvania Constitution).