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Proposal: On-Site Retention Standard

New Jersey Waterways Are Impaired

2014 Integrated Report Summary Aquatic Life Use - General Assessment



- 98% of waterways fail to fully meet water quality standards
- Approximately ¹/₂ of impairments with an attributed cause are due to urban runoff
- The EPA estimates that urban stormwater is causing impairments in over 68% of New Jersey's river miles

New Jersey Waterways Are Impaired



New Jersey Communities Are Flooding



Why?

New Jersey's current stormwater rules are not strong enough because they do not address overall increases in stormwater runoff volumes from development sites.

- Groundwater recharge (maintain pre-construction)
- Peak runoff rates (maintain pre-construction)
- Sediment removal

Many developed sites continue to generate high runoff volumes and pollution loads even when meeting the current standards.

Proposal: Establish an On-Site Retention Standard

Requirement to retain on-site the volume from the water quality design storm (1.25 inches of rainfall) with no discharge to surface waters.

- The standard would be met using infiltration, evapotranspiration, or capture and reuse.
- It could incorporate alternative provisions for sites where full retention is not technically feasible (e.g., off-site mitigation).

This approach is recommended by the U.S. EPA and the National Research Council.

Modeling the Benefits of On-Site Retention

- Princeton Hydro modeled the change in total runoff volume from pre- to post-development conditions under two stormwater management scenarios:
 - Design #1: compliance with existing standards + retention of WQ design storm volume, using infiltration basin
 - Design #2: compliance with existing standards only, using bioretention basin + detention basin
- Hypothetical 10-acre site, ¹/₄-acre residential new development
- Modeling included four soil groups, four storm sizes

Results

The on-site retention scenario resulted in a <u>smaller net increase</u> <u>in total runoff volume</u> when compared to the scenario meeting current standards only, under most of the simulations modeled.

In some of the simulations, the retention scenario actually <u>decreased runoff volume</u> compared to pre-development conditions.

Results

Percent Increase in Total Runoff Volume.

	HSG A		HSG B		HSG C		HSG D	
	Design 1	Design 2						
WQ	0%	0%	0%	0%	-100%	654%	-100%	223%
2YR	0%	0%	202%	266%	43%	71%	15%	44%
10YR	1424%*	1214%*	97%	115%	29%	41%	13%	27%
100YR	341%*	339%*	49%	52%	18%	23%	9%	16%

*Note that the percent increases for HSG A appear extremely large due to the relatively small volumes under pre-development conditions.

Retention Standards Are Practicable & Common

Jurisdiction	Retention Standard
Washington, DC	Retain the 90 th percentile rainfall event (1.2 inches)
Tennessee	Retain 1 inch of rainfall using infiltration, evapotranspiration, and harvest/reuse
West Virginia	Keep and manage on-site the first 1 inch of rainfall with no discharge
Connecticut	Retain the volume generated by 1 inch of rainfall
New York	Manage 90 th percentile storm volume through infiltration, recharge, reuse, recycling, or evaporation
Federal facilities	Retain the 95 th percentile rainfall event

Thank You