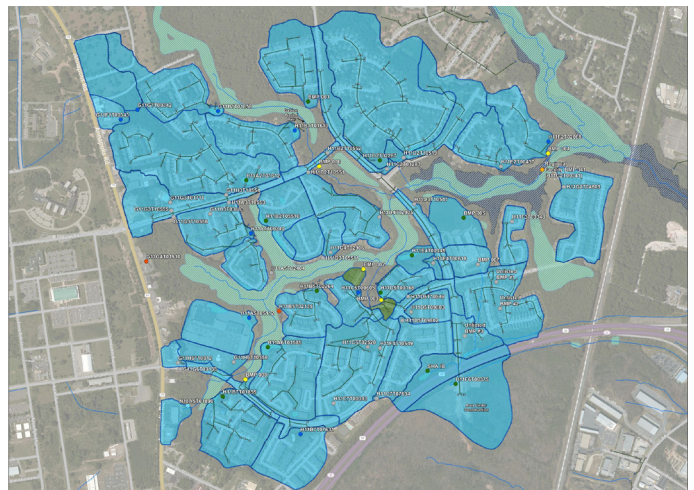


# Severn Feasibility Study and Retrofit Concept Development Study

Anne Arundel County, Maryland

As part of Anne Arundel County, Maryland's efforts to meet 2017 and 2025 TMDL goals for the Chesapeake Bay watershed, the Department of Public Works (DPW) identified the potential for high priority stormwater retrofit by identifying subwatersheds with significant impervious area draining to existing pond sites. Based on the evaluation, DPW selected the Severn Run Tributary 2 Subwatershed containing a large regional public pond (BMP 341) for further evaluation. Of the over 700 acres within this subwatershed, 234 acres were impervious surface. The study documented that there are many stormwater facilities located throughout the subwatershed that currently provide water quality treatment for runoff flowing over the majority of the impervious acreage. This acreage is located within the large tracts of recent development falling within the BMP Era of 1985–2001.

To help the DPW maximize water quality and impervious acreage treatment within this subwatershed, Biohabitats and Century Engineering conducted a three-step feasibility study. The Biohabitats/Century team began by documenting and field evaluating all existing stormwater facilities in the subwatershed, as well as identifying all water quality opportunities, including both retrofits and new opportunities. In all, this included regional pond BMP 341, as well as five outfalls and 52 existing upland BMP sites. Next, they calculated existing pollutant load reduction by the regional pond BMP 341 and the upland BMPs, and further vetted potential retrofit and treatment opportunities for BMP 341. Lastly, they ranked and prioritized the retrofit opportunities for upland BMP opportunities available to meet any remaining treatment deficit.



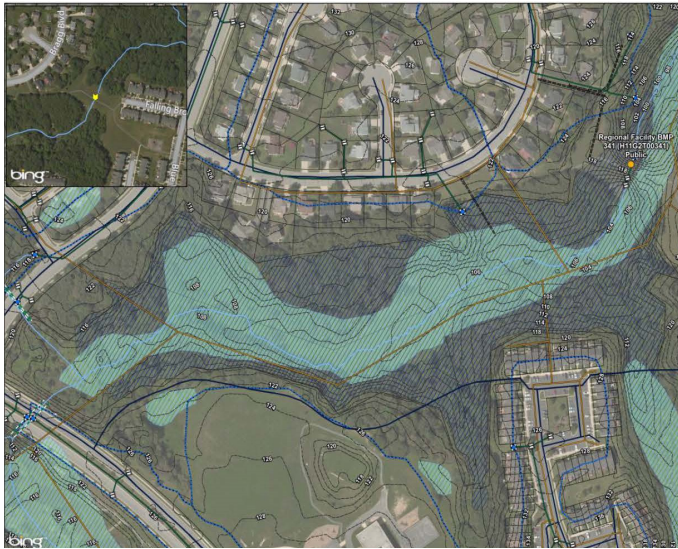
from top: Drainage area map with existing BMPs by type; Drainage area currently receiving water quality treatment (blue areas)

*conservation planning*  
*ecological restoration*  
***regenerative design***



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Mapping and photographs showing initial conditions—  
Regional Pond 341

*These studies help Anne Arundel County meet their existing state and federal water quality requirements, and continue to improve water quality in the Chesapeake Bay Watershed by identifying, evaluating, and prioritizing water quality retrofit opportunities.*

This study included desktop and field assessment of existing conditions; documentation, mapping, and assessment of BMPs in the subwatershed for water quality treatment and major maintenance (or failing conditions); and identification and ranking of potential BMP retrofits and new BMPs such as the downstream receiving areas at unmanaged outfalls. The Biohabitats/Century team identified 14 upland BMPs as priority retrofits, and documented several BMPs requiring maintenance or retrofitting to address failed or failing conditions. The team provided preliminary computations for the existing water quality volume and impervious area treatment for the County’s use in determining available credit from MDE as the existing treatment had not been included in their National Pollutant Discharge Elimination System Municipal Separate Stormwater Sewer Systems annual reporting to

MDE. Based on study findings, a recommendation of “no retrofit and documentation only” was made as the best approach for regional pond BMP 341, due to site constraints and anticipated natural resource permit limitations.

The Biohabitats/Century team developed 10% feasibility/conceptual designs for retrofitting the high priority BMP sites and new BMP outfall retrofits. Strategies included regenerative stormwater conveyance, stream and wetland restoration, and Environmental Site Design (ESD) techniques.

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